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AMERICAN EPHEMERIS

AND

NAUTICAL ALMANAC

FOR THE YEAR

1894

FIRST EDITION

PUBLISHED IN COMPLIANCE WITH A JOINT RESOLUTION OF THE FORTY-SIXTH CONGRESS

WASHINGTON:
BUREAU OF EQUIPMENT.
1891.

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JOINT RESOLUTION

FOR PRINTING THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be printed annually at the Government Printing Office fifteen hundred copies of the American Ephemeris and Nautical Almanac and of the papers supplementary thereto, of which one hundred shall be for the use of the Senate, four hundred for the House of Representatives, and one thousand for the public service, to be distributed by the Navy Department.

Sec. 2. *That additional copies of the Ephemeris and of the Nautical Almanac extracted therefrom may be ordered by the Secretary of the Navy for sale: Provided, That all moneys received from such sale shall be deposited in the Treasury to the credit of the appropriation for public printing.*

Approved, February 11, 1880.

PREFACE.

The arrangement of *The American Ephemeris* adopted in the volume for the year 1882, and explained in the Appendix to that volume, has been continued without radical change to the present time.

The additions then made comprise more complete data for eclipses of the sun, diagrams showing the configurations of the satellites of Jupiter, data respecting the disks of Mercury and Venus for the reduction of meridian and photometric observations, and diagrams, with tables, for identifying any known satellites of other planets. The work is divided into three parts, as follows:—

Part I, *Ephemeris for the Meridian of Greenwich,* gives the geocentric and heliocentric positions of the major planets, the Ephemeris of the Sun, and other fundamental astronomical data for equi-distant intervals of Greenwich mean time.

Part II, *Ephemeris for the Meridian of Washington,* gives the ephemerides of the fixed stars, sun, moon, and major planets for transit over the meridian of Washington. The mean places of the fixed stars and the data for their reduction are also included in this part. The list of mean and apparent places of fixed stars has been greatly enlarged, for the convenience of field-astronomers.

Part III, *Phenomena,* contains predictions of phenomena to be observed, with data for their computation. Washington mean time is used in this part except in a few cases, notably that of eclipses, where Greenwich mean time was judged more convenient.

SIMON NEWCOMB,
Professor U. S. Navy, Superintendent.

WASHINGTON, *May,* 1891.

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CORRECTIONS.

Ephemeris for 1891 (*First Edition only*).

Page 298,	Dec. of 4 Ursæ Minoris,	*for* 78° 8′ 35″.14	*read* 78° 3′ 35″.14
300,	R. A., α^2 Capricorni,	" 29^h	" 20^h
332,	Dec., α Leonis,	" 19°	" 12°
350,	R. A., γ Draconis,	" 15^h	" 17^h
387,	Bright Limb of Moon from May 8 to May 18,	" II	" I
501,	Lines 30 and 31,	" Chicago	*read* a point 1° South of Chicago
	and	" 41°	" 40°

Ephemeris of 1892 (*First Edition only*).

Page 299,	Line 36,	*for* * θ Herculis,	*read* * o Herculis.

Ephemeris of 1893 (*First Edition only*).

Page 411,	Solar Eclipse of April 15—16.	*For* Eclipse ends, in Long. 4° 57′.7 E.,	*read* 14° 57′.7 E.
485,	Aug. 22,	" ♂	" ♃
485,	Dec. $6^d\ 1^h\ 30^m$,	" ☿ — 6° 9′	" ☿ + 6° 9′
505,	Line 33,	" cost	" coast
508,	First line,	" 449	" 445

CHRONOLOGICAL ERAS AND CYCLES.

CHRONOLOGICAL ERAS.

THE YEAR 1894, WHICH COMPRISES THE LATTER PART OF THE 118TH AND THE BEGINNING OF THE 119TH YEAR OF THE INDEPENDENCE OF THE UNITED STATES OF AMERICA, CORRESPONDS TO—

The year 6607 of the Julian Period;
" 7402–7403 of the Byzantine era, the year 7403 commencing on September 1st;
" 5654–5655 of the Jewish era, the year 5655 commencing on October 1st, or, more exactly, at sunset on September 30th;
" 2647 since the foundation of Rome, according to Varro;
" 2641 since the beginning of the era of Nabonassar, which has been assigned to Wednesday, the 26th of February of the 3967th year of the Julian Period; corresponding, in the notation of chronologists, to the 747th; and, in the notation of astronomers, to the 746th year before the birth of Christ;
" 2670 of the Olympiads, or the second year of the 668th Olympiad commencing in July, 1894, if we fix the era of the Olympiads at 775½ years before Christ, or near the beginning of July of the year 3938 of the Julian Period;
" 2206 of the Grecian era, or the era of the Seleucidæ;
" 1610 of the era of Diocletian;
" 2554 of the Japanese era and to the 27th year of the period entitled "Meiji."

The year 1312 of the Mohammedan era, or the era of the Hegira, begins on the 5th day of July, 1894.

The first day of January of the year 1894 is the 2,412,830th day since the commencement of the Julian Period.

CHRONOLOGICAL CYCLES.

Dominical Letter	G	Solar Cycle	27
Epact	23	Roman Indiction	7
Lunar Cycle or Golden Number	14	Julian Period	6607

SYMBOLS AND ABBREVIATIONS.

SIGNS OF THE PLANETS, ETC.

☉	The Sun.	♂	Mars.
☾	The Moon.	♃	Jupiter.
☿	Mercury.	♄	Saturn.
♀	Venus.	⛢	Uranus.
⊕	The Earth.	♆	Neptune.

SIGNS OF THE ZODIAC.

Spring Signs.	1.	♈	Aries.	Autumn Signs.	7.	♎	Libra.
	2.	♉	Taurus.		8.	♏	Scorpius.
	3.	♊	Gemini.		9.	♐	Sagittarius.
Summer Signs.	4.	♋	Cancer.	Winter Signs.	10.	♑	Capricornus.
	5.	♌	Leo.		11.	♒	Aquarius.
	6.	♍	Virgo.		12.	♓	Pisces.

ASPECTS.

☌	Conjunction, or having the same Longitude or Right Ascension.
□	Quadrature, or differing 90° in Longitude or Right Ascension.
☍	Opposition, or differing 180° in Longitude or Right Ascension.

ABBREVIATIONS.

☊	Ascending Node.	°	Degrees.
☋	Descending Node.	′	Minutes of Arc.
N.	North.	″	Seconds of Arc.
S.	South.	^{h}	Hours.
E.	East.	^{m}	Minutes of Time.
W.	West.	^{s}	Seconds of Time.

PART I

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF GREENWICH

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	18 48 22.70	11.040	S.22 59 21.9	+12.76	16 18.36	71.05	3 52.72	1.180
Tues.	2	18 52 47.51	11.026	22 54 1.9	13.90	16 18.35	71.00	4 20.90	1.166
Wed.	3	18 57 11.96	11.011	22 48 14.7	15.04	16 18.34	70.94	4 48.71	1.151
Thur.	4	19 1 36.02	10.994	22 42 0.2	+16.17	16 18.32	70.89	5 16.14	1.134
Frid.	5	19 5 59.67	10.976	22 35 18.6	17.29	16 18.30	70.83	5 43.16	1.116
Sat.	6	19 10 22.88	10.957	22 28 10.2	18.41	16 18.28	70.77	6 9.73	1.097
SUN.	7	19 14 45.60	10.936	22 20 35.2	+19.51	16 18.25	70.70	6 35.82	1.076
Mon.	8	19 19 7.80	10.914	22 12 33.7	20.60	16 18.22	70.63	7 1.40	1.054
Tues.	9	19 23 29.48	10.891	22 4 6.1	21.68	16 18.18	70.56	7 26.44	1.032
Wed.	10	19 27 50.58	10.867	21 55 12.5	+22.76	16 18.14	70.48	7 50.92	1.008
Thur.	11	19 32 11.08	10.841	21 45 53.4	23.82	16 18.10	70.40	8 14.80	0.982
Frid.	12	19 36 30.97	10.815	21 36 8.8	24.87	16 18.05	70.32	8 38.06	0.955
Sat.	13	19 40 50.20	10.788	21 25 59.3	+25.91	16 18.00	70.24	9 0.68	0.928
SUN.	14	19 45 8.77	10.759	21 15 24.9	26.93	16 17.94	70.15	9 22.63	0.900
Mon.	15	19 49 26.65	10.731	21 4 26.2	27.94	16 17.88	70.05	9 43.89	0.871
Tues.	16	19 53 43.82	10.701	20 53 3.4	+28.95	16 17.81	69.96	10 4.45	0.842
Wed.	17	19 58 0.28	10.671	20 41 16.8	29.94	16 17.74	69.87	10 24.29	0.812
Thur.	18	20 2 16.00	10.639	20 29 6.7	30.91	16 17.66	69.77	10 43.40	0.781
Frid.	19	20 6 30.97	10.608	20 16 33.6	+31.86	16 17.58	69.67	11 1.77	0.749
Sat.	20	20 10 45.19	10.576	20 3 37.6	32.80	16 17.49	69.56	11 19.38	0.717
SUN.	21	20 14 58.64	10.544	19 50 19.2	33.73	16 17.39	69.46	11 36.22	0.686
Mon.	22	20 19 11.32	10.512	19 36 38.7	+34.65	16 17.29	69.35	11 52.30	0.654
Tues.	23	20 23 23.23	10.479	19 22 36.5	35.55	16 17.18	69.25	12 7.61	0.622
Wed.	24	20 27 34.34	10.447	19 8 12.9	36.42	16 17.06	69.14	12 22.13	0.589
Thur.	25	20 31 44.68	10.414	18 53 28.2	+37.29	16 16.94	69.03	12 35.88	0.556
Frid.	26	20 35 54.22	10.381	18 38 22.8	38.14	16 16.82	68.92	12 48.83	0.523
Sat.	27	20 40 2.98	10.348	18 22 57.1	38.98	16 16.69	68.80	13 0.98	0.490
SUN.	28	20 44 10.92	10.315	18 7 11.5	+39.81	16 16.55	68.69	13 12.35	0.457
Mon.	29	20 48 18.08	10.281	17 51 6.3	40.62	16 16.41	68.58	13 22.91	0.424
Tues.	30	20 52 24.42	10.248	17 34 41.9	41.41	16 16.27	68.46	13 32.68	0.390
Wed.	31	20 56 29.97	10.214	17 17 58.7	42.18	16 16.12	68.35	13 41.64	0.357
Thur.	32	21 0 34.71	10.181	S.17 0 57.1	+42.94	16 15.96	68.23	13 49.80	0.323

Note.—The mean time of semidiameter passing may be found by subtracting 0ˢ.19 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	18 48 21.98	11.036	S. 22 59 22.7	+12.74	3 52.64	1.180	18 44 29.34
Tues.	2	18 52 46.71	11.022	22 54 3.0	13.89	4 20.81	1.166	18 48 25.90
Wed.	3	18 57 11.08	11.007	22 48 15.9	15.03	4 48.62	1.151	18 52 22.46
Thur.	4	19 1 35.06	10.990	22 42 1.7	+16.16	5 16.04	1.134	18 56 19.02
Frid.	5	19 5 58.63	10.973	22 35 20.3	17.28	5 43.05	1.116	19 0 15.58
Sat.	6	19 10 21.75	10.954	22 28 12.2	18.40	6 9.61	1.097	19 4 12.14
SUN.	7	19 14 44.39	10.933	22 20 37.4	+19.50	6 35.70	1.076	19 8 8.69
Mon.	8	19 19 6.53	10.911	22 12 36.2	20.60	7 1.27	1.054	19 12 5.25
Tues.	9	19 23 28.13	10.888	22 4 8.8	21.69	7 26.32	1.032	19 16 1.81
Wed.	10	19 27 49.16	10.864	21 55 15.5	+22.77	7 50.79	1.008	19 19 58.37
Thur.	11	19 32 9.60	10.839	21 45 56.7	23.82	8 14.67	0.982	19 23 54.93
Frid.	12	19 36 29.41	10.813	21 36 12.4	24.86	8 37.92	0.955	19 27 51.49
Sat.	13	19 40 48.58	10.786	21 26 3.2	+25.90	9 0.54	0.928	19 31 48.04
SUN.	14	19 45 7.09	10.757	21 15 29.2	26.92	9 22.49	0.900	19 35 44.60
Mon.	15	19 49 24.91	10.728	21 4 30.8	27.93	9 43.75	0.871	19 39 41.16
Tues.	16	19 53 42.03	10.698	20 53 8.3	+28.93	10 4.31	0.842	19 43 37.72
Wed.	17	19 57 58.43	10.668	20 41 22.0	29.92	10 24.15	0.812	19 47 34.28
Thur.	18	20 2 14.10	10.637	20 29 12.3	30.89	10 43.26	0.781	19 51 30.84
Frid.	19	20 6 29.02	10.606	20 16 39.5	+31.84	11 1.63	0.749	19 55 27.39
Sat.	20	20 10 43.19	10.574	20 3 43.8	32.78	11 19.24	0.717	19 59 23.95
SUN.	21	20 14 56.60	10.542	19 50 25.8	33.71	11 36.09	0.686	20 3 20.51
Mon.	22	20 19 9.24	10.510	19 36 45.6	+34.63	11 52.17	0.654	20 7 17.07
Tues.	23	20 23 21.11	10.478	19 22 43.7	35.53	12 7.49	0.622	20 11 13.62
Wed.	24	20 27 32.19	10.446	19 8 20.4	36.41	12 22.01	0.589	20 15 10.18
Thur.	25	20 31 42.49	10.413	18 53 36.1	+37.28	12 35.76	0.556	20 19 6.74
Frid.	26	20 35 52.01	10.380	18 38 31.0	38.13	12 48.71	0.523	20 23 3.29
Sat.	27	20 40 0.73	10.347	18 23 5.7	38.97	13 0.88	0.490	20 26 59.85
SUN.	28	20 44 8.65	10.314	18 7 20.4	+39.79	13 12.24	0.457	20 30 56.41
Mon.	29	20 48 15.78	10.280	17 51 15.4	40.60	13 22.82	0.424	20 34 52.96
Tues.	30	20 52 22.11	10.247	17 34 51.3	41.40	13 32.59	0.390	20 38 49.52
Wed.	31	20 56 27.64	10.214	17 18 8.4	42.17	13 41.56	0.357	20 42 46.08
Thur.	32	21 0 32.36	10.181	S. 17 1 7.0	+42.93	13 49.72	0.323	20 46 42.64

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour,
+9ˢ.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
		THE SUN'S						
Day of the Month.	Day of the Year.	TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	1	281 7 27.3	7 31.1	152.92	− 0.35	9.9926742	+ 1.2	5 14 38.97
2	2	282 8 37.9	8 41.5	152.94	0.47	9.9926781	2.0	5 10 43.06
3	3	283 9 48.5	9 51.9	152.95	0.57	9.9926839	2.8	5 6 47.14
4	4	284 10 59.2	11 2.4	152.95	− 0.65	9.9926914	+ 3.5	5 2 51.23
5	5	285 12 9.9	12 12.9	152.94	0.70	9.9927009	4.3	4 58 55.32
6	6	286 13 20.6	13 23.4	152.94	0.72	9.9927119	4.9	4 54 59.40
7	7	287 14 31.1	14 33.7	152.93	− 0.71	9.9927244	+ 5.6	4 51 3.49
8	8	288 15 41.3	15 43.8	152.92	0.67	9.9927387	6.3	4 47 7.58
9	9	289 16 51.2	16 53.5	152.90	0.61	9.9927548	7.0	4 43 11.67
10	10	290 18 0.6	18 2.7	152.88	− 0.52	9.9927725	+ 7.7	4 39 15.76
11	11	291 19 9.5	19 11.4	152.86	0.40	9.9927919	8.5	4 35 19.84
12	12	292 20 17.8	20 19.6	152.82	0.28	9.9928132	9.3	4 31 23.93
13	13	293 21 25.4	21 26.9	152.80	− 0.15	9.9928366	+10.1	4 27 28.02
14	14	294 22 32.2	22 33.5	152.77	0.00	9.9928619	11.0	4 23 32.10
15	15	295 23 38.2	23 39.4	152.74	+ 0.12	9.9928896	12.0	4 19 36.19
16	16	296 24 43.3	24 44.3	152.70	+ 0.24	9.9929195	+13.0	4 15 40.28
17	17	297 25 47.6	25 48.4	152.67	0.33	9.9929519	14.0	4 11 44.37
18	18	298 26 51.2	26 51.8	152.63	0.40	9.9929867	15.1	4 7 48.46
19	19	299 27 53.8	27 54.2	152.59	+ 0.44	9.9930242	+16.2	4 3 52.54
20	20	300 28 55.6	28 55.9	152.56	0.46	9.9930643	17.3	3 59 56.63
21	21	301 29 56.6	29 56.7	152.53	0.44	9.9931072	18.4	3 56 0.72
22	22	302 30 56.9	30 56.8	152.50	+ 0.39	9.9931528	+19.6	3 52 4.81
23	23	303 31 56.4	31 56.2	152.47	0.32	9.9932011	20.7	3 48 8.90
24	24	304 32 55.3	32 54.9	152.43	0.22	9.9932520	21.7	3 44 12.99
25	25	305 33 53.4	33 52.8	152.40	+ 0.11	9.9933054	+22.8	3 40 17.08
26	26	306 34 50.9	34 50.2	152.37	− 0.02	9.9933613	23.8	3 36 21.16
27	27	307 35 47.6	35 46.7	152.35	0.15	9.9934197	24.8	3 32 25.25
28	28	308 36 43.6	36 42.5	152.32	− 0.29	9.9934803	+25.6	3 28 29.34
29	29	309 37 38.9	37 37.7	152.29	0.41	9.9935428	26.4	3 24 33.43
30	30	310 38 33.6	38 32.2	152.26	0.52	9.9936071	27.2	3 20 37.52
31	31	311 39 27.5	39 26.0	152.23	0.60	9.9936735	28.0	3 16 41.61
32	32	312 40 20.7	40 19.0	152.19	− 0.65	9.9937413	+28.6	3 12 45.70

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^{d}.0$.

Diff. for 1 Hour,
$-9^{s}.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 58.0	14 54.4	54 49.0	−1.20	54 35.6	−1.03	20 19.3	1.91	24.2
2	14 51.3	14 48.8	54 24.3	0.86	54 15.0	0.70	21 5.9	2.00	25.2
3	14 46.7	14 45.3	54 7.6	0.53	54 2.2	0.38	21 55.0	2.09	26.2
4	14 44.2	14 43.6	53 58.4	−0.25	53 56.1	−0.13	22 45.8	2.14	27.2
5	14 43.4	14 43.6	53 55.4	0.00	53 56.1	+0.11	23 37.3	2.14	28.2
6	14 44.2	14 45.1	53 58.1	+0.22	54 1.4	0.33	δ		29.2
7	14 46.3	14 47.8	54 5.9	+0.43	54 11.7	+0.53	0 28.2	2.09	0.4
8	14 49.7	14 51.9	54 18.6	0.63	54 26.7	0.73	1 17.4	2.02	1.4
9	14 54.5	14 57.4	54 36.0	0.83	54 46.7	0.94	2 4.4	1.91	2.4
10	15 0.6	15 4.2	54 58.6	+1.05	55 11.8	+1.16	2 49.1	1.82	3.4
11	15 8.2	15 12.6	55 26.5	1.29	55 42.7	1.41	3 32.0	1.76	4.4
12	15 17.4	15 22.6	56 0.3	1.53	56 19.3	1.65	4 14.2	1.75	5.4
13	15 28.2	15 34.1	56 39.8	+1.76	57 1.6	+1.86	4 56.7	1.80	6.4
14	15 40.3	15 46.9	57 24.5	1.95	57 48.5	2.03	5 41.0	1.90	7.4
15	15 53.6	16 0.4	58 13.1	2.07	58 38.1	2.08	6 28.5	2.06	8.4
16	16 7.2	16 13.8	59 3.0	+2.05	59 27.3	+1.98	7 20.6	2.29	9.4
17	16 20.1	16 25.9	59 50.4	1.85	60 11.8	1.68	8 18.5	2.54	10.4
18	16 31.1	16 35.4	60 30.8	1.45	60 46.7	1.18	9 22.1	2.74	11.4
19	16 38.8	16 41.0	60 59.0	+0.85	61 7.1	+0.49	10 29.2	2.82	12.4
20	16 41.9	16 41.6	61 10.7	+0.10	61 9.6	−0.30	11 36.3	2.74	13.4
21	16 40.0	16 37.1	61 3.6	−0.69	60 52.9	1.07	12 39.7	2.53	14.4
22	16 33.0	16 27.8	60 37.9	−1.42	60 18.9	−1.73	13 37.5	2.29	15.4
23	16 21.7	16 14.9	59 56.5	1.98	59 31.4	2.18	14 29.9	2.08	16.4
24	16 7.5	15 59.8	59 4.2	2.32	58 35.8	2.39	15 17.9	1.93	17.4
25	15 51.9	15 43.9	58 6.8	−2.42	57 37.7	−2.40	16 3.1	1.85	18.4
26	15 36.2	15 28.8	57 9.3	2.33	56 41.9	2.22	16 47.0	1.82	19.4
27	15 21.7	15 15.2	56 16.1	2.08	55 52.1	1.91	17 30.7	1.83	20.4
28	15 9.2	15 3.9	55 30.2	−1.73	55 10.6	−1.54	18 15.3	1.89	21.4
29	14 59.2	14 55.1	54 53.3	1.34	54 38.4	1.13	19 1.7	1.98	22.4
30	14 51.8	14 49.2	54 26.3	0.91	54 16.6	0.71	19 50.2	2.06	23.4
31	14 47.2	14 45.8	54 9.2	0.52	54 4.2	−0.33	20 40.6	2.12	24.4
32	14 45.1	14 44.9	54 1.4	−0.15	54 0.7	+0.03	21 32.0	2.15	25.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 27 9.84	1.9382	S.16 44 25.4	11.924
1	14 29 6.21	1.9409	16 56 18.6	11.848
2	14 31 2.75	1.9438	17 8 7.2	11.771
3	14 32 59.47	1.9467	17 19 51.1	11.693
4	14 34 56.36	1.9497	17 31 30.4	11.615
5	14 36 53.43	1.9526	17 43 4.9	11.535
6	14 38 50.67	1.9556	17 54 34.6	11.455
7	14 40 48.10	1.9587	18 5 59.5	11.374
8	14 42 45.72	1.9618	18 17 19.5	11.293
9	14 44 43.52	1.9649	18 28 34.7	11.211
10	14 46 41.51	1.9682	18 39 44.9	11.128
11	14 48 39.70	1.9714	18 50 50.1	11.045
12	14 50 38.08	1.9747	19 1 50.3	10.961
13	14 52 36.66	1.9780	19 12 45.4	10.875
14	14 54 35.44	1.9812	19 23 35.3	10.788
15	14 56 34.41	1.9846	19 34 20.0	10.701
16	14 58 33.59	1.9881	19 44 59.5	10.614
17	15 0 32.98	1.9915	19 55 33.7	10.527
18	15 2 32.57	1.9949	20 6 2.7	10.438
19	15 4 32.37	1.9984	20 16 26.3	10.348
20	15 6 32.38	2.0019	20 26 44.4	10.257
21	15 8 32.60	2.0055	20 36 57.1	10.166
22	15 10 33.04	2.0091	20 47 4.3	10.074
23	15 12 33.69	2.0126	S.20 57 5.9	9.981

TUESDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 14 34.55	2.0162	S.21 7 2.0	9.887
1	15 16 35.63	2.0198	21 16 52.4	9.792
2	15 18 36.93	2.0235	21 26 37.1	9.697
3	15 20 38.45	2.0272	21 36 16.1	9.602
4	15 22 40.19	2.0308	21 45 49.3	9.505
5	15 24 42.15	2.0344	21 55 16.7	9.407
6	15 26 44.32	2.0381	22 4 38.2	9.309
7	15 28 46.72	2.0418	22 13 53.8	9.210
8	15 30 49.34	2.0456	22 23 3.4	9.111
9	15 32 52.19	2.0493	22 32 7.1	9.011
10	15 34 55.26	2.0531	22 41 4.7	8.909
11	15 36 58.56	2.0568	22 49 56.2	8.807
12	15 39 2.08	2.0606	22 58 41.5	8.704
13	15 41 5.83	2.0643	23 7 20.7	8.601
14	15 43 9.80	2.0680	23 15 53.6	8.497
15	15 45 13.99	2.0718	23 24 20.3	8.392
16	15 47 18.41	2.0756	23 32 40.7	8.286
17	15 49 23.06	2.0793	23 40 54.7	8.179
18	15 51 27.93	2.0830	23 49 2.2	8.072
19	15 53 33.02	2.0867	23 57 3.3	7.964
20	15 55 38.34	2.0905	24 4 57.9	7.856
21	15 57 43.88	2.0942	24 12 46.0	7.747
22	15 59 49.64	2.0979	24 20 27.5	7.636
23	16 1 55.62	2.1016	24 28 2.3	7.525
24	16 4 1.83	2.1053	S.24 35 30.5	7.414

WEDNESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 4 1.83	2.1053	S.24 35 30.5	7.414
1	16 6 8.26	2.1089	24 42 52.0	7.302
2	16 8 14.90	2.1125	24 50 6.7	7.188
3	16 10 21.76	2.1162	24 57 14.6	7.075
4	16 12 28.84	2.1198	25 4 15.7	6.961
5	16 14 36.13	2.1233	25 11 9.9	6.846
6	16 16 43.63	2.1268	25 17 57.2	6.730
7	16 18 51.34	2.1303	25 24 37.5	6.613
8	16 20 59.27	2.1339	25 31 10.8	6.497
9	16 23 7.41	2.1373	25 37 37.1	6.379
10	16 25 15.75	2.1408	25 43 56.3	6.260
11	16 27 24.30	2.1442	25 50 8.3	6.141
12	16 29 33.05	2.1475	25 56 13.2	6.022
13	16 31 42.00	2.1508	26 2 10.9	5.901
14	16 33 51.15	2.1541	26 8 1.3	5.780
15	16 36 0.49	2.1574	26 13 44.5	5.659
16	16 38 10.03	2.1606	26 19 20.4	5.537
17	16 40 19.76	2.1637	26 24 48.9	5.413
18	16 42 29.67	2.1668	26 30 10.0	5.290
19	16 44 39.77	2.1698	26 35 23.7	5.166
20	16 46 50.05	2.1728	26 40 29.9	5.042
21	16 49 0.51	2.1758	26 45 28.7	4.917
22	16 51 11.15	2.1787	26 50 19.9	4.790
23	16 53 21.96	2.1816	S.26 55 3.5	4.664

THURSDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 55 32.94	2.1844	S.26 59 39.6	4.537
1	16 57 44.09	2.1872	27 4 8.0	4.410
2	16 59 55.40	2.1898	27 8 28.8	4.282
3	17 2 6.87	2.1924	27 12 41.9	4.154
4	17 4 18.49	2.1950	27 16 47.3	4.025
5	17 6 30.27	2.1976	27 20 44.9	3.896
6	17 8 42.20	2.2001	27 24 34.8	3.767
7	17 10 54.28	2.2024	27 28 16.9	3.636
8	17 13 6.49	2.2047	27 31 51.1	3.505
9	17 15 18.84	2.2069	27 35 17.5	3.374
10	17 17 31.32	2.2091	27 38 36.0	3.242
11	17 19 43.93	2.2112	27 41 46.6	3.110
12	17 21 56.67	2.2133	27 44 49.2	2.978
13	17 24 9.53	2.2152	27 47 43.9	2.845
14	17 26 22.50	2.2171	27 50 30.6	2.712
15	17 28 35.58	2.2189	27 53 9.3	2.578
16	17 30 48.77	2.2207	27 55 40.0	2.445
17	17 33 2.07	2.2224	27 58 2.7	2.311
18	17 35 15.46	2.2239	28 0 17.3	2.176
19	17 37 28.94	2.2255	28 2 23.8	2.041
20	17 39 42.52	2.2270	28 4 22.2	1.907
21	17 41 56.18	2.2283	28 6 12.6	1.772
22	17 44 9.91	2.2295	28 7 54.8	1.636
23	17 46 23.72	2.2307	28 9 28.9	1.500
24	17 48 37.60	2.2318	S.28 10 54.8	1.363

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 5.					**SUNDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 48 37.60	2.2318	S.28 10 54.8	1.363	0	19 35 26.08	2.1874	S.26 39 25.5	5.104
1	17 50 51.54	2.2328	28 12 12.5	1.227	1	19 37 37.24	2.1847	26 34 15.4	5.232
2	17 53 5.54	2.2338	28 13 22.1	1.091	2	19 39 48.24	2.1819	26 28 57.7	5.358
3	17 55 19.60	2.2347	28 14 23.5	0.955	3	19 41 59.07	2.1790	26 23 32.5	5.483
4	17 57 33.71	2.2355	28 15 16.7	0.818	4	19 44 9.72	2.1761	26 17 59.7	5.609
5	17 59 47.86	2.2362	28 16 1.7	0.681	5	19 46 20.20	2.1732	26 12 19.4	5.734
6	18 2 2.05	2.2368	28 16 38.4	0.544	6	19 48 30,50	2.1702	26 6 31.6	5.858
7	18 4 16.28	2.2373	28 17 6.9	0.407	7	19 50 40.62	2.1671	26 0 36.4	5.982
8	18 6 30.53	2.2377	28 17 27.2	0.270	8	19 52 50.55	2.1639	25 54 33.8	6.105
9	18 8 44.80	2.2380	28 17 39.3	−0.132	9	19 55 0.29	2.1607	25 48 23.8	6.227
10	18 10 59.09	2.2383	28 17 43.1	+0.005	10	19 57 9.84	2.1576	25 42 6.5	6.348
11	18 13 13.40	2.2386	28 17 38.7	0.142	11	19 59 19.20	2.1544	25 35 42.0	6.469
12	18 15 27.72	2.2387	28 17 26.0	0.280	12	20 1 28.37	2.1512	25 29 10.2	6.590
13	18 17 42.04	2.2387	28 17 5.1	0.417	13	20 3 37.34	2.1478	25 22 31.2	6.710
14	18 19 56.36	2.2386	28 16 36.0	0.554	14	20 5 46.10	2.1443	25 15 45.0	6.829
15	18 22 10.67	2.2384	28 15 58.6	0.692	15	20 7 54.66	2.1409	25 8 51.7	6.947
16	18 24 24.97	2.2382	28 15 13.0	0.829	16	20 10 3.01	2.1375	25 1 51.4	7.064
17	18 26 39.25	2.2378	28 14 19.1	0.966	17	20 12 11.16	2.1341	24 54 44.0	7.182
18	18 28 53.50	2.2374	28 13 17.0	1.103	18	20 14 19.10	2.1306	24 47 29.6	7.298
19	18 31 7.73	2.2369	28 12 6.7	1.240	19	20 16 26.83	2.1271	24 40 8.2	7.413
20	18 33 21.93	2.2363	28 10 48.2	1.377	20	20 18 34.35	2.1235	24 32 40.0	7.528
21	18 35 36.09	2.2357	28 9 21.4	1.515	21	20 20 41.65	2.1199	24 25 4.9	7.642
22	18 37 50.21	2.2348	28 7 46.4	1.652	22	20 22 48.73	2.1163	24 17 23.0	7.755
23	18 40 4.27	2.2339	S.28 6 3.2	1.788	23	20 24 55.60	2.1128	S.24 9 34.3	7.868
	SATURDAY 6.					**MONDAY 8.**			
0	18 42 18.28	2.2330	S.28 4 11.9	1.924	0	20 27 2.26	2.1091	S.24 1 38.8	7.981
1	18 44 32.23	2.2320	28 2 12.4	2.060	1	20 29 8.70	2.1054	23 53 36.6	8.092
2	18 46 46.12	2.2309	28 0 4.7	2.197	2	20 31 14.91	2.1017	23 45 27.8	8.201
3	18 48 59.94	2.2297	27 57 48.8	2.333	3	20 33 20.90	2.0980	23 37 12.5	8.310
4	18 51 13.68	2.2284	27 55 24.8	2.468	4	20 35 26.67	2.0942	23 28 50.6	8.419
5	18 53 27.35	2.2271	27 52 52.7	2.603	5	20 37 32.21	2.0905	23 20 22.2	8.527
6	18 55 40.94	2.2257	27 50 12.5	2.738	6	20 39 37.53	2.0867	23 11 47.4	8.633
7	18 57 54.44	2.2242	27 47 24.2	2.873	7	20 41 42.62	2.0830	23 3 6.2	8.740
8	19 0 . 7.84	2.2226	27 44 27.8	3.007	8	20 43 47.49	2.0793	22 54 18.6	8.847
9	19 2 21.15	2.2210	27 41 23.4	3.140	9	20 45 52.14	2.0756	22 45 24.6	8.952
10	19 4 34.36	2.2192	27 38 11.0	3.274	10	20 47 56.56	2.0718	22 36 24.4	9.055
11	19 6 47.46	2.2173	27 34 50.5	3.408	11	20 50 0.75	2.0680	22 27 18.0	9.157
12	19 9 0.44	2.2154	27 31 22.0	3.542	12	20 52 4.72	2.0642	22 18 5.5	9.260
13	19 11 13.31	2.2135	27 27 45.5	3.674	13	20 54 8.46	2.0604	22 8 46.8	9.362
14	19 13 26.06	2.2115	27 24 1.1	3.806	14	20 56 11.97	2.0567	21 59 22.0	9.462
15	19 15 38.69	2.2094	27 20 8.8	3.937	15	20 58 15.26	2.0529	21 49 51.3	9.562
16	19 17 51.19	2.2072	27 16 8.6	4.069	16	21 0 18.32	2.0491	21 40 14.6	9.661
17	19 20 3.56	2.2050	27 12 0.5	4.201	17	21 2 21.15	2.0453	21 30 32.0	9.759
18	19 22 15.79	2.2027	27 7 44.5	4.331	18	21 4 23.76	2.0416	21 20 43.5	9.857
19	19 24 27.88	2.2003	27 3 20.8	4.461	19	21 6 26.14	2.0379	21 10 49.2	9.953
20	19 26 39.82	2.1979	26 58 49.2	4.591	20	21 8 28.30	2.0342	21 0 49.1	10.049
21	19 28 51.62	2.1954	26 54 9.8	4.721	21	21 10 30.24	2.0304	20 50 43.3	10.143
22	19 31 3.27	2.1928	26 49 22.7	4.849	22	21 12 31.95	2.0267	20 40 31.9	10.237
23	19 33 14.76	2.1901	26 44 27.9	4.977	23	21 14 33.44	2.0229	20 30 14.8	10.331
24	19 35 26.08	2.1874	S.26 39 25.5	5.104	24	21 16 34.70	2.0192	S.20 19 52.2	10.423

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 16 34.70	2.0192	S. 20 19 52.2	10.423
1	21 18 35.74	2.0156	20 9 24.1	10.514
2	21 20 36.57	2.0120	19 58 50.5	10.606
3	21 22 37.18	2.0083	19 48 11.4	10.696
4	21 24 37.57	2.0047	19 37 27.0	10.784
5	21 26 37.75	2.0012	19 26 37.3	10.872
6	21 28 37.72	1.9977	19 15 42.3	10.960
7	21 30 37.48	1.9942	19 4 42.1	11.047
8	21 32 37.02	1.9906	18 53 36.7	11.132
9	21 34 36.35	1.9872	18 42 26.3	11.215
10	21 36 35.48	1.9838	18 31 10.9	11.299
11	21 38 34.40	1.9804	18 19 50.4	11.383
12	21 40 33.11	1.9769	18 8 24.9	11.466
13	21 42 31.62	1.9735	17 56 54.5	11.547
14	21 44 29.93	1.9702	17 45 19.3	11.627
15	21 46 28.05	1.9670	17 33 39.3	11.706
16	21 48 25.97	1.9638	17 21 54.6	11.785
17	21 50 23.70	1.9606	17 10 5.1	11.863
18	21 52 21.24	1.9574	16 58 11.0	11.940
19	21 54 18.59	1.9542	16 46 12.3	12.016
20	21 56 15.75	1.9512	16 34 9.1	12.092
21	21 58 12.73	1.9482	16 22 1.3	12.166
22	22 0 9.53	1.9452	16 9 49.1	12.239
23	22 2 6.15	1.9421	S. 15 57 32.6	12.312

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 4 2.58	1.9391	S. 15 45 11.7	12.384
1	22 5 58.84	1.9363	15 32 46.5	12.455
2	22 7 54.94	1.9336	15 20 17.1	12.525
3	22 9 50.87	1.9308	15 7 43.5	12.594
4	22 11 46.64	1.9281	14 55 5.8	12.663
5	22 13 42.25	1.9254	14 42 24.0	12.731
6	22 15 37.69	1.9228	14 29 38.1	12.798
7	22 17 32.98	1.9202	14 16 48.2	12.864
8	22 19 28.12	1.9177	14 3 54.4	12.928
9	22 21 23.11	1.9152	13 50 56.8	12.992
10	22 23 17.95	1.9128	13 37 55.3	13.056
11	22 25 12.65	1.9105	13 24 50.1	13.119
12	22 27 7.21	1.9082	13 11 41.1	13.181
13	22 29 1.63	1.9059	12 58 28.4	13.242
14	22 30 55.92	1.9037	12 45 12.1	13.302
15	22 32 50.08	1.9017	12 31 52.2	13.361
16	22 34 44.12	1.8997	12 18 28.8	13.419
17	22 36 38.04	1.8976	12 5 1.9	13.477
18	22 38 31.83	1.8956	11 51 31.6	13.534
19	22 40 25.51	1.8937	11 37 57.9	13.590
20	22 42 19.08	1.8919	11 24 20.8	13.645
21	22 44 12.54	1.8901	11 10 40.5	13.698
22	22 46 5.89	1.8884	10 56 57.0	13.752
23	22 47 59.15	1.8868	10 43 10.3	13.805
24	22 49 52.31	1.8852	S. 10 29 20.4	13.857

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 49 52.31	1.8852	S. 10 29 20.4	13.857
1	22 51 45.38	1.8837	10 15 27.4	13.908
2	22 53 38.36	1.8822	10 1 31.4	13.958
3	22 55 31.25	1.8809	9 47 32.5	14.007
4	22 57 24.07	1.8797	9 33 30.6	14.056
5	22 59 16.81	1.8784	9 19 25.8	14.103
6	23 1 9.48	1.8772	9 5 18.2	14.150
7	23 3 2.08	1.8762	8 51 7.8	14.196
8	23 4 54.62	1.8752	8 36 54.7	14.242
9	23 6 47.10	1.8742	8 22 38.8	14.286
10	23 8 39.52	1.8732	8 8 20.3	14.329
11	23 10 31.89	1.8724	7 53 59.3	14.372
12	23 12 24.21	1.8717	7 39 35.7	14.414
13	23 14 16.49	1.8711	7 25 9.6	14.455
14	23 16 8.74	1.8705	7 10 41.1	14.495
15	23 18 0.95	1.8699	6 56 10.2	14.534
16	23 19 53.13	1.8695	6 41 37.0	14.573
17	23 21 45.29	1.8692	6 27 1.4	14.612
18	23 23 37.43	1.8688	6 12 23.6	14.648
19	23 25 29.55	1.8686	5 57 43.7	14.683
20	23 27 21.66	1.8685	5 43 1.6	14.719
21	23 29 13.77	1.8684	5 28 17.4	14.754
22	23 31 5.87	1.8684	5 13 31.1	14.787
23	23 32 57.98	1.8686	S. 4 58 42.9	14.819

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 34 50.10	1.8688	S. 4 43 52.8	14.851
1	23 36 42.23	1.8690	4 29 0.8	14.882
2	23 38 34.38	1.8693	4 14 6.9	14.913
3	23 40 26.55	1.8697	3 59 11.2	14.942
4	23 42 18.75	1.8702	3 44 13.8	14.970
5	23 44 10.98	1.8707	3 29 14.8	14.997
6	23 46 3.24	1.8714	3 14 14.2	15.023
7	23 47 55.55	1.8722	2 59 12.0	15.049
8	23 49 47.91	1.8730	2 44 8.3	15.075
9	23 51 40.31	1.8739	2 29 3.0	15.100
10	23 53 32.77	1.8749	2 13 56.3	15.122
11	23 55 25.30	1.8760	1 58 48.3	15.144
12	23 57 17.89	1.8771	1 43 39.0	15.165
13	23 59 10.55	1.8783	1 28 28.5	15.186
14	0 1 3.29	1.8797	1 13 16.7	15.206
15	0 2 56.12	1.8812	0 58 3.8	15.224
16	0 4 49.03	1.8827	0 42 49.8	15.242
17	0 6 42.04	1.8842	0 27 34.8	15.259
18	0 8 35.14	1.8858	S. 0 12 18.7	15.275
19	0 10 28.34	1.8876	N. 0 2 58.3	15.290
20	0 12 21.65	1.8895	0 18 16.1	15.304
21	0 14 15.08	1.8915	0 33 34.7	15.317
22	0 16 8.63	1.8936	0 48 54.1	15.329
23	0 18 2.31	1.8957	1 4 14.2	15.341
24	0 19 56.12	1.8979	N. 1 19 35.0	15.352

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 13.					**MONDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 19 56.12	1.8979	N. 1 19 35.0	15.352	0	1 55 21.99	2.1154	N.13 27 53.7	14.529
1	0 21 50.06	1.9002	1 34 56.4	15.361	1	1 57 29.12	2.1223	13 42 24.0	14.479
2	0 23 44.14	1.9026	1 50 18.3	15.368	2	1 59 36.66	2.1292	13 56 51.2	14.427
3	0 25 38.37	1.9051	2 5 40.6	15.375	3	2 1 44.62	2.1362	14 11 15.3	14.375
4	0 27 32.75	1.9076	2 21 3.3	15.382	4	2 3 53.00	2.1434	14 25 36.2	14.321
5	0 29 27.28	1.9103	2 36 26.4	15.387	5	2 6 1.82	2.1507	14 39 53.8	14.264
6	0 31 21.98	1.9131	2 51 49.8	15.392	6	2 8 11.08	2.1580	14 54 7.9	14.206
7	0 33 16.85	1.9159	3 7 13.4	15.395	7	2 10 20.78	2.1653	15 8 18.5	14.148
8	0 35 11.89	1.9188	3 22 37.2	15.398	8	2 12 30.92	2.1727	15 22 25.6	14.087
9	0 37 7.11	1.9218	3 38 1.2	15.400	9	2 14 41.51	2.1803	15 36 28.9	14.023
10	0 39 2.51	1.9250	3 53 25.2	15.399	10	2 16 52.56	2.1881	15 50 28.4	13.959
11	0 40 58.11	1.9283	4 8 49.1	15.398	11	2 19 4.08	2.1959	16 4 24.0	13.892
12	0 42 53.91	1.9316	4 24 13.0	15.397	12	2 21 16.07	2.2038	16 18 15.5	13.824
13	0 44 49.91	1.9350	4 39 36.7	15.394	13	2 23 28.53	2.2117	16 32 2.9	13.755
14	0 46 46.11	1.9385	4 55 0.3	15.391	14	2 25 41.47	2.2196	16 45 46.1	13.683
15	0 48 42.53	1.9421	5 10 23.6	15.385	15	2 27 54.88	2.2276	16 59 24.9	13.610
16	0 50 39.17	1.9458	5 25 46.5	15.378	16	2 30 8.78	2.2357	17 12 59.3	13.535
17	0 52 36.03	1.9496	5 41 9.0	15.371	17	2 32 23.17	2.2440	17 26 29.1	13.458
18	0 54 33.12	1.9535	5 56 31.1	15.363	18	2 34 38.06	2.2523	17 39 54.2	13.379
19	0 56 30.45	1.9575	6 11 52.6	15.353	19	2 36 53.45	2.2607	17 53 14.6	13.298
20	0 58 28.02	1.9616	6 27 13.5	15.343	20	2 39 9.34	2.2691	18 6 30.0	13.215
21	1 0 25.84	1.9657	6 42 33.8	15.332	21	2 41 25.74	2.2776	18 19 40.4	13.131
22	1 2 23.91	1.9700	6 57 53.3	15.318	22	2 43 42.65	2.2862	18 32 45.7	13.044
23	1 4 22.24	1.9744	N. 7 13 12.0	15.304	23	2 46 0.08	2.2948	N.18 45 45.7	12.956
	SUNDAY 14.					**TUESDAY 16.**			
0	1 6 20.84	1.9789	N. 7 28 29.8	15.289	0	2 48 18.03	2.3035	N.18 58 40.4	12.866
1	1 8 19.71	1.9834	7 43 46.7	15.272	1	2 50 36.50	2.3123	19 11 29.6	12.773
2	1 10 18.85	1.9881	7 59 2.5	15.254	2	2 52 55.50	2.3211	19 24 13.2	12.678
3	1 12 18.28	1.9929	8 14 17.2	15.236	3	2 55 15.03	2.3299	19 36 51.0	12.582
4	1 14 18.00	1.9977	8 29 30.8	15.216	4	2 57 35.09	2.3388	19 49 23.0	12.483
5	1 16 18.01	2.0027	8 44 43.1	15.194	5	2 59 55.69	2.3477	20 1 49.0	12.383
6	1 18 18.32	2.0077	8 59 54.1	15.172	6	3 2 16.82	2.3567	20 14 9.0	12.281
7	1 20 18.94	2.0129	9 15 3.7	15.147	7	3 4 38.50	2.3658	20 26 22.7	12.176
8	1 22 19.87	2.0182	9 30 11.8	15.122	8	3 7 0.72	2.3749	20 38 30.1	12.070
9	1 24 21.12	2.0236	9 45 18.3	15.095	9	3 9 23.49	2.3841	20 50 31.1	11.962
10	1 26 22.70	2.0290	10 0 23.2	15.067	10	3 11 46.81	2.3933	21 2 25.5	11.851
11	1 28 24.60	2.0345	10 15 26.4	15.038	11	3 14 10.68	2.4025	21 14 13.2	11.738
12	1 30 26.84	2.0402	10 30 27.8	15.007	12	3 16 35.11	2.4117	21 25 54.1	11.624
13	1 32 29.42	2.0459	10 45 27.3	14.976	13	3 19 0.09	2.4209	21 37 28.1	11.507
14	1 34 32.35	2.0517	11 0 24.9	14.943	14	3 21 25.62	2.4302	21 48 54.9	11.387
15	1 36 35.63	2.0577	11 15 20.4	14.908	15	3 23 51.71	2.4395	22 0 14.5	11.265
16	1 38 39.27	2.0637	11 30 13.8	14.872	16	3 26 18.36	2.4487	22 11 26.7	11.142
17	1 40 43.28	2.0698	11 45 5.0	14.833	17	3 28 45.56	2.4580	22 22 31.5	11.017
18	1 42 47.65	2.0760	11 59 53.8	14.793	18	3 31 13.32	2.4674	22 33 28.7	10.888
19	1 44 52.40	2.0823	12 14 40.2	14.753	19	3 33 41.65	2.4767	22 44 18.1	10.758
20	1 46 57.53	2.0887	12 29 24.2	14.712	20	3 36 10.53	2.4860	22 54 59.7	10.627
21	1 49 3.05	2.0952	12 44 5.7	14.669	21	3 38 39.97	2.4953	23 5 33.3	10.492
22	1 51 8.96	2.1018	12 58 44.5	14.623	22	3 41 9.97	2.5046	23 15 58.7	10.355
23	1 53 15.27	2.1086	13 13 20.5	14.577	23	3 43 40.53	2.5139	23 26 15.9	10.217
24	1 55 21.99	2.1154	N.13 27 53.7	14.529	24	3 46 11.64	2.5232	N.23 36 24.7	10.076

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 46 11.64	2.5232	N.23 36 24.7	10.076
1	3 48 43.31	2.5325	23 46 25.0	9.932
2	3 51 15.54	2.5417	23 56 16.6	9.787
3	3 53 48.32	2.5509	24 5 59.4	9.640
4	3 56 21.65	2.5600	24 15 33.4	9.491
5	3 58 55.52	2.5691	24 24 58.3	9.338
6	4 1 29.94	2.5782	24 34 14.0	9.184
7	4 4 4.91	2.5872	24 43 20.4	9.028
8	4 6 40.41	2.5962	24 52 17.4	8.870
9	4 9 16.45	2.6051	25 1 4.8	8.710
10	4 11 53.02	2.6139	25 9 42.6	8.547
11	4 14 30.12	2.6227	25 18 10.5	8.382
12	4 17 7.74	2.6313	25 26 28.5	8.216
13	4 19 45.88	2.6399	25 34 36.4	8.047
14	4 22 24.53	2.6485	25 42 34.1	7.876
15	4 25 3.70	2.6570	25 50 21.5	7.703
16	4 27 43.37	2.6652	25 57 58.5	7.528
17	4 30 23.53	2.6734	26 5 24.9	7.351
18	4 33 4.18	2.6816	26 12 40.6	7.172
19	4 35 45.32	2.6896	26 19 45.5	6.991
20	4 38 26.93	2.6974	26 26 39.5	6.808
21	4 41 9.01	2.7052	26 33 22.5	6.623
22	4 43 51.55	2.7128	26 39 54.3	6.436
23	4 46 34.55	2.7203	N.26 46 14.8	6.247

THURSDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 49 17.99	2.7277	N.26 52 24.0	6.057
1	4 52 1.87	2.7349	26 58 21.7	5.865
2	4 54 46.18	2.7419	27 4 7.8	5.670
3	4 57 30.90	2.7488	27 9 42.2	5.475
4	5 0 16.03	2.7555	27 15 4.8	5.278
5	5 3 1.56	2.7621	27 20 15.6	5.079
6	5 5 47.48	2.7685	27 25 14.3	4.878
7	5 8 33.78	2.7747	27 30 0.9	4.676
8	5 11 20.45	2.7807	27 34 35.4	4.472
9	5 14 7.47	2.7866	27 38 57.6	4.267
10	5 16 54.84	2.7923	27 43 7.4	4.060
11	5 19 42.54	2.7977	27 47 4.8	3.852
12	5 22 30.56	2.8029	27 50 49.7	3.643
13	5 25 18.89	2.8080	27 54 22.0	3.432
14	5 28 7.52	2.8128	27 57 41.6	3.220
15	5 30 56.43	2.8175	28 0 48.4	3.007
16	5 33 45.62	2.8219	28 3 42.4	2.792
17	5 36 35.06	2.8261	28 6 23.5	2.577
18	5 39 24.75	2.8301	28 8 51.6	2.360
19	5 42 14.67	2.8338	28 11 6.7	2.143
20	5 45 4.81	2.8373	28 13 8.8	1.925
21	5 47 55.15	2.8406	28 14 57.7	1.705
22	5 50 45.68	2.8437	28 16 33.4	1.486
23	5 53 36.39	2.8465	28 17 56.0	1.266
24	5 56 27.26	2.8491	N.28 19 5.3	1.044

FRIDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 56 27.26	2.8491	N.28 19 5.3	1.044
1	5 59 18.28	2.8514	28 20 1.3	0.822
2	6 2 9.43	2.8535	28 20 43.9	0.599
3	6 5 0.70	2.8553	28 21 13.2	0.376
4	6 7 52.07	2.8569	28 21 29.1	+0.152
5	6 10 43.53	2.8582	28 21 31.5	−0.072
6	6 13 35.06	2.8593	28 21 20.5	0.296
7	6 16 26.65	2.8602	28 20 56.0	0.520
8	6 19 18.28	2.8608	28 20 18.1	0.743
9	6 22 9.94	2.8611	28 19 26.8	0.967
10	6 25 1.61	2.8612	28 18 22.0	1.192
11	6 27 53.28	2.8610	28 17 3.7	1.417
12	6 30 44.93	2.8606	28 15 31.9	1.642
13	6 33 36.55	2.8599	28 13 46.7	1.866
14	6 36 28.12	2.8589	28 11 48.0	2.090
15	6 39 19.62	2.8577	28 9 35.9	2.313
16	6 42 11.05	2.8563	28 7 10.4	2.537
17	6 45 2.38	2.8547	28 4 31.5	2.760
18	6 47 53.61	2.8528	28 1 39.2	2.982
19	6 50 44.71	2.8506	27 58 33.6	3.203
20	6 53 35.68	2.8482	27 55 14.8	3.424
21	6 56 26.50	2.8456	27 51 42.7	3.645
22	6 59 17.15	2.8427	27 47 57.4	3.864
23	7 2 7.62	2.8396	N.27 43 59.0	4.083

SATURDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 4 57.90	2.8363	N.27 39 47.4	4.302
1	7 7 47.97	2.8327	27 35 22.8	4.518
2	7 10 37.82	2.8289	27 30 45.3	4.734
3	7 13 27.44	2.8249	27 25 54.8	4.949
4	7 16 16.81	2.8207	27 20 51.4	5.162
5	7 19 5.92	2.8162	27 15 35.3	5.374
6	7 21 54.75	2.8115	27 10 6.5	5.586
7	7 24 43.30	2.8067	27 4 25.0	5.796
8	7 27 31.55	2.8017	26 58 31.0	6.004
9	7 30 19.50	2.7965	26 52 24.5	6.212
10	7 33 7.13	2.7910	26 46 5.6	6.417
11	7 35 54.42	2.7853	26 39 34.5	6.620
12	7 38 41.37	2.7795	26 32 51.2	6.823
13	7 41 27.96	2.7735	26 25 55.7	7.024
14	7 44 14.19	2.7674	26 18 48.3	7.223
15	7 47 0.05	2.7611	26 11 29.0	7.420
16	7 49 45.52	2.7546	26 3 57.9	7.616
17	7 52 30.60	2.7479	25 56 15.1	7.810
18	7 55 15.27	2.7410	25 48 20.7	8.002
19	7 57 59.52	2.7340	25 40 14.8	8.192
20	8 0 43.35	2.7270	25 31 57.6	8.380
21	8 3 26.76	2.7198	25 23 29.2	8.567
22	8 6 9.73	2.7124	25 14 49.6	8.752
23	8 8 52.25	2.7049	25 5 59.0	8.934
24	8 11 34.32	2.6973	N.24 56 57.6	9.113

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 21.					**TUESDAY 23.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	8 11 34.32	2.6973	N.24 56 57.6	9.113	0	10 11 10.89	2.2850	N.14 55 25.5	15.045
1	8 14 15.93	2.6896	24 47 45.4	9.292	1	10 13 27.75	2.2771	14 40 20.8	15.112
2	8 16 57.07	2.6818	24 38 22.6	9.468	2	10 15 44.14	2.2692	14 25 12.1	15.177
3	8 19 37.74	2.6738	24 28 49.3	9.642	3	10 18 0.06	2.2614	14 9 59.6	15.239
4	8 22 17.93	2.6658	24 19 5.6	9.813	4	10 20 15.51	2.2536	13 54 43.4	15.299
5	8 24 57.63	2.6577	24 9 11.7	9.982	5	10 22 30.50	2.2459	13 39 23.7	15.357
6	8 27 36.85	2.6495	23 59 7.7	10.150	6	10 24 45.02	2.2383	13 24 0.5	15.414
7	8 30 15.57	2.6411	23 48 53.7	10.315	7	10 26 59.09	2.2308	13 8 34.0	15.468
8	8 32 53.78	2.6327	23 38 29.9	10.477	8	10 29 12.72	2.2234	12 53 4.3	15.521
9	8 35 31.49	2.6243	23 27 56.4	10.638	9	10 31 25.90	2.2160	12 37 31.5	15.571
10	8 38 8.69	2.6158	23 17 13.3	10.796	10	10 33 38.64	2.2087	12 21 55.8	15.618
11	8 40 45.38	2.6072	23 6 20.9	10.951	11	10 35 50.95	2.2016	12 6 17.3	15.665
12	8 43 21.55	2.5985	22 55 19.2	11.105	12	10 38 2.83	2.1945	11 50 36.0	15.710
13	8 45 57.20	2.5898	22 44 8.3	11.256	13	10 40 14.29	2.1875	11 34 52.1	15.752
14	8 48 32.32	2.5810	22 32 48.5	11.404	14	10 42 25.33	2.1805	11 19 5.8	15.792
15	8 51 6.92	2.5722	22 21 19.8	11.552	15	10 44 35.95	2.1737	11 3 17.1	15.831
16	8 53 40.99	2.5634	22 9 42.3	11.696	16	10 46 46.17	2.1670	10 47 26.1	15.867
17	8 56 14.53	2.5545	21 57 56.3	11.837	17	10 48 55.99	2.1603	10 31 33.0	15.902
18	8 58 47.53	2.5456	21 46 1.9	11.976	18	10 51 5.41	2.1537	10 15 37.8	15.936
19	9 1 20.00	2.5367	21 33 59.2	12.112	19	10 53 14.44	2.1472	9 59 40.7	15.967
20	9 3 51.94	2.5278	21 21 48.4	12.247	20	10 55 23.08	2.1408	9 43 41.8	15.996
21	9 6 23.34	2.5188	21 9 29.5	12.380	21	10 57 31.34	2.1345	9 27 41.2	16.023
22	9 8 54.20	2.5098	20 57 2.8	12.509	22	10 59 39.22	2.1283	9 11 39.0	16.049
23	9 11 24.52	2.5009	N.20 44 28.4	12.636	23	11 1 46.74	2.1223	N. 8 55 35.3	16.073
	MONDAY 22.					**WEDNESDAY 24.**			
0	9 13 54.31	2.4920	N.20 31 46.5	12.761	0	11 3 53.90	2.1163	N. 8 39 30.2	16.096
1	9 16 23.56	2.4830	20 18 57.1	12.883	1	11 6 0.70	2.1108	8 23 23.8	16.117
2	9 18 52.27	2.4740	20 6 0.5	13.002	2	11 8 7.14	2.1045	8 7 16.2	16.137
3	9 21 20.44	2.4651	19 52 56.8	13.120	3	11 10 13.24	2.0988	7 51 7.4	16.154
4	9 23 48.08	2.4562	19 39 46.1	13.235	4	11 12 19.00	2.0932	7 34 57.7	16.169
5	9 26 15.18	2.4472	19 26 28.6	13.347	5	11 14 24.42	2.0876	7 18 47.1	16.183
6	9 28 41.74	2.4383	19 13 4.4	13.458	6	11 16 29.51	2.0822	7 2 35.7	16.196
7	9 31 7.77	2.4294	18 59 33.6	13.567	7	11 18 34.28	2.0768	6 46 23.6	16.207
8	9 33 33.27	2.4206	18 45 56.4	13.672	8	11 20 38.73	2.0715	6 30 10.9	16.217
9	9 35 58.24	2.4118	18 32 13.0	13.774	9	11 22 42.86	2.0663	6 13 57.6	16.225
10	9 38 22.68	2.4030	18 18 23.5	13.875	10	11 24 46.69	2.0613	5 57 43.9	16.231
11	9 40 46.60	2.3942	18 4 28.0	13.974	11	11 26 50.22	2.0564	5 41 29.9	16.235
12	9 43 9.99	2.3855	17 50 26.6	14.071	12	11 28 53.46	2.0516	5 25 15.7	16.238
13	9 45 32.86	2.3768	17 36 19.5	14.164	13	11 30 56.41	2.0468	5 9 1.3	16.241
14	9 47 55.21	2.3682	17 22 6.9	14.255	14	11 32 59.07	2.0420	4 52 46.8	16.242
15	9 50 17.05	2.3596	17 7 48.9	14.344	15	11 35 1.45	2.0374	4 36 32.3	16.241
16	9 52 38.37	2.3511	16 53 25.6	14.431	16	11 37 3.56	2.0330	4 20 17.9	16.238
17	9 54 59.18	2.3427	16 38 57.2	14.516	17	11 39 5.41	2.0287	4 4 3.7	16.234
18	9 57 19.49	2.3342	16 24 23.7	14.598	18	11 41 7.00	2.0244	3 47 49.8	16.228
19	9 59 39.29	2.3258	16 9 45.4	14.677	19	11 43 8.34	2.0202	3 31 36.3	16.222
20	10 1 58.59	2.3176	15 55 2.4	14.756	20	11 45 9.43	2.0161	3 15 23.1	16.216
21	10 4 17.40	2.3094	15 40 14.7	14.832	21	11 47 10.27	2.0120	2 59 10.4	16.207
22	10 6 35.72	2.3012	15 25 22.6	14.904	22	11 49 10.87	2.0081	2 42 58.3	16.196
23	10 8 53.55	2.2931	15 10 26.2	14.976	23	11 51 11.24	2.0043	2 26 46.9	16.183
24	10 11 10.89	2.2850	N.14 55 25.5	15.045	24	11 53 11.39	2.0006	N. 2 10 36.3	16.170

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 53 11.39	2.0006	N. 2 10 36.3	16.170
1	11 55 11.32	1.9970	1 54 26.5	16.156
2	11 57 11.03	1.9934	1 38 17.6	16.141
3	11 59 10.53	1.9900	1 22 9.6	16.125
4	12 1 9.83	1.9867	1 6 2.6	16.107
5	12 3 8.94	1.9835	0 49 56.7	16.087
6	12 5 7.85	1.9803	0 33 52.1	16.067
7	12 7 6.57	1.9772	0 17 48.7	16.046
8	12 9 5.12	1.9743	N. 0 1 46.6	16.023
9	12 11 3.49	1.9714	S. 0 14 14.1	16.000
10	12 13 1.69	1.9686	0 30 13.4	15.975
11	12 14 59.72	1.9659	0 46 11.1	15.949
12	12 16 57.60	1.9634	1 2 7.2	15.922
13	12 18 55.33	1.9609	1 18 1.7	15.894
14	12 20 52.91	1.9584	1 33 54.5	15.864
15	12 22 50.34	1.9560	1 49 45.4	15.833
16	12 24 47.63	1.9538	2 5 34.5	15.802
17	12 26 44.80	1.9517	2 21 21.7	15.770
18	12 28 41.84	1.9497	2 37 6.9	15.737
19	12 30 38.76	1.9477	2 52 50.1	15.702
20	12 32 35.56	1.9458	3 8 31.2	15.667
21	12 34 32.25	1.9440	3 24 10.1	15.630
22	12 36 28.84	1.9423	3 39 46.8	15.592
23	12 38 25.33	1.9407	S. 3 55 21.2	15.554

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 40 21.72	1.9391	S. 4 10 53.3	15.515
1	12 42 18.02	1.9377	4 26 23.0	15.475
2	12 44 14.24	1.9363	4 41 50.3	15.434
3	12 46 10.38	1.9350	4 57 15.1	15.392
4	12 48 6.44	1.9338	5 12 37.3	15.348
5	12 50 2.44	1.9328	5 27 56.9	15.304
6	12 51 58.38	1.9318	5 43 13.8	15.259
7	12 53 54.26	1.9308	5 58 28.0	15.213
8	12 55 50.08	1.9299	6 13 39.4	15.167
9	12 57 45.85	1.9292	6 28 48.0	15.119
10	12 59 41.58	1.9285	6 43 53.7	15.071
11	13 1 37.27	1.9278	6 58 56.5	15.022
12	13 3 32.92	1.9272	7 13 56.3	14.971
13	13 5 28.54	1.9268	7 28 53.0	14.920
14	13 7 24.14	1.9265	7 43 46.7	14.869
15	13 9 19.72	1.9262	7 58 37.3	14.817
16	13 11 15.28	1.9260	8 13 24.7	14.763
17	13 13 10.84	1.9259	8 28 8.8	14.708
18	13 15 6.39	1.9258	8 42 49.6	14.653
19	13 17 1.94	1.9258	8 57 27.1	14.597
20	13 18 57.49	1.9258	9 12 1.2	14.540
21	13 20 53.04	1.9260	9 26 31.9	14.482
22	13 22 48.61	1.9262	9 40 59.1	14.424
23	13 24 44.19	1.9265	9 55 22.8	14.366
24	13 26 39.79	1.9269	S. 10 9 43.0	14.306

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 26 39.79	1.9269	S. 10 9 43.0	14.306
1	13 28 35.42	1.9274	10 23 59.5	14.244
2	13 30 31.08	1.9279	10 38 12.3	14.183
3	13 32 26.77	1.9285	10 52 21.4	14.121
4	13 34 22.50	1.9292	11 6 26.8	14.057
5	13 36 18.27	1.9299	11 20 28.3	13.993
6	13 38 14.09	1.9308	11 34 26.0	13.929
7	13 40 9.96	1.9317	11 48 19.8	13.864
8	13 42 5.89	1.9326	12 2 9.7	13.798
9	13 44 1.87	1.9335	12 15 55.6	13.731
10	13 45 57.91	1.9346	12 29 37.4	13.663
11	13 47 54.02	1.9358	12 43 15.2	13.596
12	13 49 50.20	1.9370	12 56 48.9	13.527
13	13 51 46.46	1.9382	13 10 18.4	13.457
14	13 53 42.79	1.9395	13 23 43.7	13.387
15	13 55 39.20	1.9409	13 37 4.8	13.316
16	13 57 35.70	1.9424	13 50 21.6	13.243
17	13 59 32.29	1.9440	14 3 34.0	13.170
18	14 1 28.98	1.9456	14 16 42.0	13.097
19	14 3 25.76	1.9472	14 29 45.6	13.023
20	14 5 22.64	1.9489	14 42 44.7	12.948
21	14 7 19.63	1.9506	14 55 39.4	12.873
22	14 9 16.72	1.9524	15 8 29.5	12.797
23	14 11 13.92	1.9543	S. 15 21 15.0	12.720

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 13 11.24	1.9562	S. 15 33 55.9	12.642
1	14 15 8.67	1.9582	15 46 32.1	12.564
2	14 17 6.22	1.9603	15 59 3.6	12.485
3	14 19 3.90	1.9624	16 11 30.3	12.405
4	14 21 1.71	1.9646	16 23 52.2	12.324
5	14 22 59.65	1.9667	16 36 9.2	12.243
6	14 24 57.72	1.9689	16 48 21.4	12.162
7	14 26 55.92	1.9713	17 0 28.6	12.079
8	14 28 54.27	1.9737	17 12 30.8	11.996
9	14 30 52.76	1.9760	17 24 28.1	11.912
10	14 32 51.39	1.9784	17 36 20.3	11.827
11	14 34 50.17	1.9809	17 48 7.4	11.742
12	14 36 49.10	1.9834	17 59 49.3	11.655
13	14 38 48.18	1.9860	18 11 26.0	11.569
14	14 40 47.42	1.9887	18 22 57.6	11.482
15	14 42 46.82	1.9913	18 34 23.9	11.393
16	14 44 46.38	1.9940	18 45 44.8	11.304
17	14 46 46.10	1.9967	18 57 0.4	11.215
18	14 48 45.98	1.9994	19 8 10.6	11.124
19	14 50 46.03	2.0023	19 19 15.3	11.033
20	14 52 46.25	2.0052	19 30 14.6	10.942
21	14 54 46.65	2.0081	19 41 8.4	10.851
22	14 56 47.22	2.0109	19 51 56.7	10.758
23	14 58 47.96	2.0138	20 2 39.3	10.663
24	15 0 48.88	2.0168	S. 20 13 16.3	10.569

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 0 48.88	2.0168	S.20 13 16.3	10.569
1	15 2 49.98	2.0198	20 23 47.6	10.474
2	15 4 51.26	2.0229	20 34 13.2	10.379
3	15 6 52.73	2.0260	20 44 33.1	10.282
4	15 8 54.38	2.0291	20 54 47.1	10.185
5	15 10 56.22	2.0322	21 4 55.3	10.087
6	15 12 58.24	2.0353	21 14 57.6	9.989
7	15 15 0.45	2.0384	21 24 54.0	9.890
8	15 17 2.85	2.0416	21 34 44.4	9.790
9	15 19 5.45	2.0449	21 44 28.8	9.690
10	15 21 8.24	2.0481	21 54 7.2	9.588
11	15 23 11.22	2.0513	22 3 39.4	9.486
12	15 25 14.39	2.0545	22 13 5.5	9.384
13	15 27 17.76	2.0578	22 22 25.5	9.281
14	15 29 21.33	2.0612	22 31 39.2	9.177
15	15 31 25.10	2.0645	22 40 46.7	9.072
16	15 33 29.07	2.0677	22 49 47.9	8.967
17	15 35 33.23	2.0710	22 58 42.8	8.862
18	15 37 37.59	2.0743	23 7 31.3	8.755
19	15 39 42.15	2.0777	23 16 13.4	8.647
20	15 41 46.91	2.0811	23 24 49.0	8.539
21	15 43 51.88	2.0845	23 33 18.1	8.431
22	15 45 57.05	2.0878	23 41 40.7	8.322
23	15 48 2.41	2.0910	S.23 49 56.8	8.213

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 50 7.97	2.0943	S.23 58 6.3	8.102
1	15 52 13.73	2.0977	24 6 9.1	7.991
2	15 54 19.70	2.1011	24 14 5.2	7.879
3	15 56 25.87	2.1045	24 21 54.6	7.767
4	15 58 32.24	2.1078	24 29 37.2	7.653
5	16 0 38.80	2.1110	24 37 13.0	7.540
6	16 2 45.56	2.1143	24 44 42.0	7.426
7	16 4 52.52	2.1176	24 52 4.1	7.311
8	16 6 59.68	2.1209	24 59 19.3	7.195
9	16 9 7.03	2.1242	25 6 27.5	7.079
10	16 11 14.58	2.1274	25 13 28.8	6.962
11	16 13 22.32	2.1307	25 20 23.0	6.845
12	16 15 30.26	2.1339	25 27 10.2	6.727
13	16 17 38.39	2.1371	25 33 50.3	6.608
14	16 19 46.71	2.1402	25 40 23.2	6.489
15	16 21 55.22	2.1434	25 46 49.0	6.370
16	16 24 3.92	2.1465	25 53 7.6	6.249
17	16 26 12.80	2.1495	25 59 18.9	6.128
18	16 28 21.86	2.1526	26 5 22.9	6.006
19	16 30 31.11	2.1557	26 11 19.6	5.884
20	16 32 40.54	2.1586	26 17 9.0	5.762
21	16 34 50.14	2.1615	26 22 51.1	5.640
22	16 36 59.92	2.1645	26 28 25.8	5.516
23	16 39 9.88	2.1674	26 33 53.0	5.391
24	16 41 20.01	2.1703	S.26 39 12.7	5.266

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 41 20.01	2.1703	S.26 39 12.7	5.266
1	16 43 30.31	2.1731	26 44 24.9	5.141
2	16 45 40.78	2.1758	26 49 29.6	5.015
3	16 47 51.41	2.1786	26 54 26.7	4.888
4	16 50 2.21	2.1813	26 59 16.2	4.762
5	16 52 13.16	2.1839	27 3 58.1	4.635
6	16 54 24.27	2.1865	27 8 32.4	4.507
7	16 56 35.54	2.1891	27 12 59.0	4.379
8	16 58 46.96	2.1915	27 17 17.9	4.250
9	17 0 58.52	2.1939	27 21 29.0	4.121
10	17 3 10.23	2.1963	27 25 32.4	3.992
11	17 5 22.08	2.1987	27 29 28.0	3.861
12	17 7 34.07	2.2010	27 33 15.7	3.730
13	17 9 46.20	2.2032	27 36 55.6	3.599
14	17 11 58.46	2.2053	27 40 27.6	3.468
15	17 14 10.84	2.2074	27 43 51.8	3.337
16	17 16 23.35	2.2095	27 47 8.1	3.205
17	17 18 35.98	2.2115	27 50 16.4	3.072
18	17 20 48.73	2.2134	27 53 16.7	2.939
19	17 23 1.59	2.2153	27 56 9.1	2.807
20	17 25 14.56	2.2171	27 58 53.5	2.673
21	17 27 27.64	2.2188	28 1 29.8	2.539
22	17 29 40.82	2.2205	28 3 58.1	2.405
23	17 31 54.10	2.2221	S.28 6 18.4	2.271

THURSDAY, FEBRUARY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 34 7.47	2.2236	S.28 8 30.6	2.136

PHASES OF THE MOON.

		d	h	m
● New Moon . .	Jan.	6	15	7.4
☽ First Quarter . . .		14	12	9.2
○ Full Moon		21	3	11.5
☾ Last Quarter		28	4	50.8

		d	h
☾ Apogee	Jan.	5	0.0
☾ Perigee		20	3.2

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Pollux	W.	108° 14′ 9″	2976	109° 44′ 52″	2983	111° 15′ 26″	2991	112° 45′ 50″	2999
	Regulus	W.	71 33 9	2981	73 3 45	2989	74 34 12	2997	76 4 29	3004
	Sun	E.	61 15 30	3379	59 52 50	3388	58 30 20	3398	57 8 1	3407
2	Regulus	W.	83 33 46	3035	85 3 15	3041	86 32 37	3046	88 1 53	3050
	Spica	W.	29 30 48	3034	31 0 18	3039	32 29 43	3043	33 59 2	3047
	Saturn	W.	28 5 25	3076	29 34 4	3079	31 2 39	3082	32 31 11	3085
	Sun	E.	50 18 48	3446	48 57 23	3454	47 36 7	3460	46 14 58	3567
3	Regulus	W.	95 26 57	3069	96 55 45	3072	98 24 29	3074	99 53 10	3077
	Spica	W.	41 24 25	3065	42 53 18	3068	44 22 7	3070	45 50 53	3072
	Saturn	W.	39 53 1	3096	41 21 15	3099	42 49 26	3101	44 17 35	3101
	Sun	E.	39 30 59	3497	38 10 31	3502	36 50 9	3507	35 29 53	3514
4	Spica	W.	53 14 12	3079	54 42 47	3079	56 11 22	3080	57 39 56	3081
	Saturn	W.	51 38 1	3106	53 6 3	3106	54 34 5	3106	56 2 7	3106
	Sun	E.	28 50 14	3545	27 30 40	3554	26 11 15	3563	24 52 0	3572
8	Sun	W.	15 42 51	3616	17 1 8	3580	18 20 4	3550	19 39 33	3524
	α Pegasi	E.	53 39 57	3512	52 19 46	3528	50 59 53	3545	49 40 19	3565
	Jupiter	E.	108 6 7	3014	106 36 12	3009	105 6 11	3005	103 36 4	3000
9	Sun	W.	26 23 1	3435	27 44 38	3422	29 6 30	3408	30 28 37	3397
	α Arietis	E.	81 45 33	3014	80 15 38	3009	78 45 37	3004	77 15 29	2998
	Jupiter	E.	96 3 56	2974	94 33 11	2968	93 2 18	2962	91 31 18	2956
10	Sun	W.	37 22 28	3341	38 45 52	3331	40 9 28	3320	41 33 16	3310
	α Arietis	E.	69 43 0	2968	68 12 7	2962	66 41 7	2956	65 9 59	2949
	Jupiter	E.	83 54 19	2924	82 22 30	2916	80 50 32	2909	79 18 24	2901
	Aldebaran	E.	100 22 11	2981	98 51 34	2973	97 20 48	2965	95 49 52	2957
11	Sun	W.	48 35 23	3256	50 0 26	3244	51 25 43	3233	52 51 13	3221
	α Arietis	E.	57 32 11	2916	56 0 12	2909	54 28 4	2901	52 55 47	2894
	Jupiter	E.	71 35 18	2861	70 2 9	2852	68 28 49	2843	66 55 17	2834
	Aldebaran	E.	88 12 34	2915	86 40 34	2905	85 8 22	2897	83 35 59	2887
12	Sun	W.	60 2 12	3162	61 29 7	3148	62 56 18	3136	64 23 44	3122
	α Arietis	E.	45 12 12	2862	43 39 4	2856	42 5 49	2851	40 32 27	2846
	Jupiter	E.	59 4 33	2785	57 29 45	2775	55 54 44	2764	54 19 29	2753
	Aldebaran	E.	75 51 2	2838	74 17 24	2829	72 43 34	2819	71 9 31	2808
13	Sun	W.	71 45 2	3053	73 14 9	3039	74 43 34	3024	76 13 17	3009
	Fomalhaut	W.	37 52 25	3270	39 17 11	3219	40 42 58	3170	42 9 43	3124
	Venus	W.	32 37 49	2889	34 10 22	2871	35 43 18	2853	37 16 37	2835
	Jupiter	E.	46 19 33	2696	44 42 48	2685	43 5 48	2673	41 28 32	2661
	Aldebaran	E.	63 15 50	2756	61 40 24	2745	60 4 44	2735	58 28 50	2724
14	Sun	W.	83 46 35	2931	85 18 14	2916	86 50 13	2899	88 22 33	2883
	Fomalhaut	W.	49 36 10	2937	51 7 42	2905	52 39 54	2876	54 12 44	2846
	Venus	W.	45 9 4	2745	46 44 44	2728	48 20 47	2710	49 57 14	2692
	Aldebaran	E.	50 25 52	2674	48 48 37	2664	47 11 9	2655	45 33 29	2646
	Pollux	E.	93 32 34	2569	91 52 57	2554	90 12 59	2540	88 32 41	2526

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Pollux	W.	114° 16′ 4″	3005	115° 46′ 10″	3013	117° 16′ 7″	3019	118° 45′ 56″	3026
	Regulus	W.	77 34 37	3011	79 4 36	3018	80 34 27	3024	82 4 10	3030
	Sun	E.	55 45 52	3415	54 23 52	3423	53 2 2	3431	51 40 21	3438
2	Regulus	W.	89 31 4	3055	91 0 9	3058	92 29 10	3062	93 58 6	3066
	Spica	W.	35 28 16	3052	36 57 25	3056	38 26 29	3059	39 55 29	3062
	Saturn	W.	33 59 39	3087	35 28 4	3090	36 56 26	3092	38 24 45	3095
	Sun	E.	44 53 57	3473	43 33 3	3479	42 12 15	3485	40 51 34	3490
3	Regulus	W.	101 21 48	3078	102 50 24	3081	104 18 57	3082	105 47 29	3083
	Spica	W.	47 19 37	3074	48 48 18	3075	50 16 58	3077	51 45 36	3078
	Saturn	W.	45 45 43	3103	47 13 49	3104	48 41 54	3105	50 9 58	3105
	Sun	E.	34 9 44	3520	32 49 42	3525	31 29 45	3532	30 9 56	3538
4	Spica	W.	59 8 29	3081	60 37 2	3080	62 5 36	3080	63 34 10	3079
	Saturn	W.	57 30 9	3106	58 58 11	3105	60 26 14	3105	61 54 18	3105
	Sun	E.	23 32 55	3584	22 14 3	3598	20 55 26	3612	19 37 5	3632
8	Sun	W.	20 59 31	3502	22 19 53	3482	23 40 37	3465	25 1 40	3449
	α Pegasi	E.	48 21 7	3587	47 2 19	3613	45 43 59	3640	44 26 8	3671
	Jupiter	E.	102 5 51	2995	100 35 32	2990	99 5 7	2985	97 34 35	2979
	Sun	W.	31 50 57	3385	33 13 31	3374	34 36 17	3363	35 59 16	3351
9	α Arietis	E.	75 45 14	2993	74 14 52	2986	72 44 22	2981	71 13 45	2974
	Jupiter	E.	90 0 10	2950	88 28 55	2943	86 57 31	2937	85 25 59	2931
10	Sun	W.	42 57 16	3299	44 21 29	3288	45 45 54	3277	47 10 32	3266
	α Arietis	E.	63 38 42	2942	62 7 17	2936	60 35 44	2929	59 4 2	2922
	Jupiter	E.	77 46 7	2894	76 13 40	2886	74 41 3	2878	73 8 16	2869
	Aldebaran	E.	94 18 45	2949	92 47 28	2941	91 16 1	2932	89 44 23	2924
11	Sun	W.	54 16 57	3210	55 42 54	3198	57 9 6	3186	58 35 32	3174
	α Arietis	E.	51 23 21	2887	49 50 46	2881	48 18 3	2875	46 45 12	2868
	Jupiter	E.	65 21 33	2825	63 47 37	2815	62 13 29	2805	60 39 8	2795
	Aldebaran	E.	82 3 24	2878	80 30 37	2869	78 57 38	2859	77 24 26	2849
12	Sun	W.	65 51 27	3109	67 19 26	3096	68 47 41	3082	70 16 13	3068
	α Arietis	E.	38 58 59	2842	37 25 25	2838	35 51 47	2835	34 18 5	2834
	Jupiter	E.	52 43 59	2742	51 8 15	2731	49 32 16	2719	47 56 2	2708
	Aldebaran	E.	69 35 14	2798	68 0 44	2788	66 26 0	2777	64 51 2	2766
13	Sun	W.	77 43 18	2994	79 13 38	2978	80 44 18	2963	82 15 17	2948
	Fomalhaut	W.	43 37 23	3082	45 5 54	3043	46 35 14	3005	48 5 20	2970
	Venus	W.	38 50 20	2817	40 24 26	2799	41 58 55	2781	43 33 48	2763
	Jupiter	E.	39 51 0	2649	38 13 12	2638	36 35 8	2626	34 56 48	2613
	Aldebaran	E.	56 52 42	2713	55 16 20	2703	53 39 44	2693	52 2 55	2683
14	Sun	W.	89 55 14	2868	91 28 16	2849	93 1 40	2832	94 35 26	2816
	Fomalhaut	W.	55 46 12	2818	57 20 16	2792	58 54 55	2766	60 30 8	2740
	Venus	W.	51 34 4	2674	53 11 19	2656	54 48 58	2638	56 27 1	2621
	Aldebaran	E.	43 55 39	2640	42 17 39	2633	40 39 29	2628	39 1 12	2624
	Pollux	E.	86 52 2	2510	85 11 2	2494	83 29 40	2478	81 47 56	2463

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	Sun	W.	96° 9′ 33″	2799	97° 44′ 2″	2782	99° 18′ 54″	2765	100° 54′ 8″	2748
	Fomalhaut	W.	62 5 55	2716	63 42 14	2692	65 19 4	2669	66 56 25	2647
	Venus	W.	58 5 28	2602	59 44 20	2585	61 23 36	2566	63 3 17	2548
	α Pegasi	W.	42 36 37	3153	44 3 43	3094	45 32 0	3040	47 1 23	2990
	Aldebaran	E.	37 22 50	2622	35 44 25	2621	34 5 58	2622	32 27 33	2627
	Pollux	E.	80 5 51	2447	78 23 23	2431	76 40 33	2416	74 57 21	2400
16	Sun	W.	108 55 53	2664	110 33 21	2647	112 11 12	2631	113 49 25	2614
	Fomalhaut	W.	75 10 28	2544	76 50 40	2525	78 31 18	2507	80 12 22	2489
	Venus	W.	71 27 55	2460	73 10 5	2442	74 52 40	2425	76 35 39	2408
	α Pegasi	W.	54 42 45	2783	56 17 35	2749	57 53 10	2716	59 29 28	2686
	Pollux	E.	66 15 38	2321	64 30 9	2305	62 44 17	2290	60 58 3	2274
	Regulus	E.	102 57 55	2325	101 12 32	2310	99 26 47	2294	97 40 39	2279
17	Sun	W.	122 5 57	2538	123 46 18	2522	125 27 0	2509	127 8 1	2496
	Fomalhaut	W.	88 43 37	2410	90 26 58	2396	92 10 39	2382	93 54 39	2369
	Venus	W.	85 16 36	2326	87 1 58	2311	88 47 42	2296	90 33 48	2281
	α Pegasi	W.	67 40 41	2553	69 20 40	2530	71 1 11	2509	72 42 12	2489
	α Arietis	W.	24 5 12	2448	25 47 38	2404	27 31 7	2365	29 15 32	2331
	Pollux	E.	52 1 16	2200	50 12 49	2187	48 24 2	2173	46 34 54	2159
	Regulus	E.	88 44 20	2204	86 55 58	2190	85 7 15	2176	83 18 11	2163
18	α Pegasi	W.	81 13 50	2405	82 57 18	2391	84 41 6	2379	86 25 11	2368
	α Arietis	W.	38 8 39	2202	39 57 3	2184	41 45 55	2167	43 35 13	2150
	Jupiter	W.	23 22 50	2159	25 12 19	2141	27 2 16	2124	28 52 38	2109
	Pollux	E.	37 24 22	2099	35 33 22	2090	33 42 7	2079	31 50 36	2070
	Regulus	E.	74 7 58	2101	72 17 1	2090	70 25 47	2081	68 34 18	2070
19	α Arietis	W.	52 47 12	2088	54 38 30	2079	56 30 2	2070	58 21 47	2062
	Jupiter	W.	38 9 37	2052	40 1 50	2044	41 54 15	2037	43 46 51	2031
	Regulus	E.	59 13 22	2031	57 20 36	2025	55 27 40	2019	53 34 36	2016
	Spica	E.	113 13 52	2023	111 20 54	2017	109 27 47	2012	107 34 31	2006
	Saturn	E.	115 24 20	2039	113 31 46	2032	111 39 2	2026	109 46 9	2021
20	α Arietis	W.	67 42 54	2041	69 35 25	2039	71 27 59	2038	73 20 34	2038
	Jupiter	W.	53 11 52	2012	55 5 7	2012	56 58 23	2012	58 51 39	2012
	Aldebaran	W.	37 31 57	2153	39 21 35	2140	41 11 33	2129	43 1 48	2121
	Regulus	E.	44 8 0	2005	42 14 34	2005	40 21 8	2007	38 27 45	2009
	Spica	E.	98 6 34	1993	96 12 48	1993	94 19 2	1993	92 25 16	1993
	Saturn	E.	100 20 6	2007	98 26 42	2006	96 33 17	2007	94 39 53	2007
21	α Arietis	W.	82 43 0	2052	84 35 14	2057	86 27 19	2064	88 19 14	2070
	Jupiter	W.	68 17 23	2027	70 10 15	2033	72 2 58	2039	73 55 31	2046
	Aldebaran	W.	52 15 15	2105	54 6 6	2107	55 56 55	2109	57 47 41	2113
	Spica	E.	82 57 14	2010	81 3 56	2016	79 10 47	2022	77 17 47	2030
	Saturn	E.	85 13 37	2024	83 20 40	2029	81 27 51	2035	79 35 12	2043
22	α Arietis	W.	97 35 45	2118	99 26 17	2129	101 16 32	2141	103 6 28	2155
	Jupiter	W.	83 15 11	2092	85 6 22	2104	86 57 15	2116	88 47 50	2128
	Aldebaran	W.	66 59 33	2146	68 49 22	2156	70 38 56	2167	72 28 14	2177
	Spica	E.	67 55 59	2075	66 4 22	2087	64 13 3	2099	62 22 2	2113
	Saturn	E.	70 15 11	2090	68 23 57	2101	66 33 0	2114	64 42 22	2126

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff.
15	**Sun**	W.	102° 29′ 44″	2731	104° 5′ 43″	2714	105° 42′ 4″	2698	107° 18′ 47″	2681
	Fomalhaut	W.	68 34 16	2625	70 12 37	2604	71 51 26	2584	73 30 43	2564
	Venus	W.	64 43 23	2530	66 23 54	2513	68 4 49	2494	69 46 10	2477
	α Pegasi	W.	48 31 48	2943	50 3 12	2900	51 35 31	2859	53 8 43	2820
	Aldebaran	E.	30 49 15	2635	29 11 8	2648	27 33 18	2668	25 55 55	2700
	Pollux	E.	73 13 46	2384	71 29 48	2368	69 45 28	2352	68 0 44	2337
16	**Sun**	W.	115 28 1	2599	117 6 58	2583	118 46 17	2567	120 25 57	2553
	Fomalhaut	W.	81 53 50	2472	83 35 42	2455	85 17 58	2439	87 0 37	2424
	Venus	W.	78 19 3	2391	80 2 51	2375	81 47 2	2358	83 31 37	2342
	α Pegasi	W.	61 6 27	2656	62 44 6	2629	64 22 22	2602	66 1 14	2577
	Pollux	E.	59 11 26	2260	57 24 27	2244	55 37 5	2229	53 49 21	2215
	Regulus	E.	95 54 8	2263	94 7 14	2248	92 19 58	2233	90 32 20	2218
17	**Sun**	W.	128 49 20	2482	130 30 58	2470	132 12 53	2458	133 55 5	2448
	Fomalhaut	W.	95 38 58	2357	97 23 34	2347	99 8 25	2337	100 53 31	2328
	Venus	W.	92 20 16	2266	94 7 5	2253	95 54 14	2239	97 41 43	2226
	α Pegasi	W.	74 23 41	2470	76 5 37	2452	77 47 58	2435	79 30 43	2419
	α Arietis	W.	31 0 47	2300	32 46 47	2272	34 33 28	2247	36 20 46	2223
	Pollux	E.	44 45 25	2147	42 55 37	2134	41 5 30	2122	39 15 5	2111
	Regulus	E.	81 28 47	2149	79 39 3	2137	77 49 0	2124	75 58 38	2113
18	α Pegasi	W.	88 9 32	2357	89 54 8	2348	91 38 57	2341	93 23 57	2335
	α Arietis	W.	45 24 56	2136	47 15 1	2122	49 5 26	2110	50 56 10	2098
	Jupiter	W.	30 43 23	2096	32 34 29	2083	34 25 55	2072	36 17 38	2061
	Pollux	E.	29 58 51	2062	28 6 53	2054	26 14 42	2047	24 22 21	2042
	Regulus	E.	66 42 33	2061	64 50 34	2053	62 58 22	2045	61 5 58	2037
19	α Arietis	W.	60 13 44	2057	62 5 50	2051	63 58 5	2046	65 50 27	2043
	Jupiter	W.	45 39 37	2026	47 32 31	2021	49 25 33	2017	51 18 40	2014
	Regulus	E.	51 41 26	2012	49 48 10	2009	47 54 49	2007	46 1 25	2006
	Spica	E.	105 41 6	2002	103 47 35	1999	101 53 59	1996	100 0 18	1994
	Saturn	E.	107 53 8	2017	106 0 0	2013	104 6 46	2010	102 13 28	2008
20	α Arietis	W.	75 13 9	2039	77 5 42	2041	78 58 13	2044	80 50 39	2047
	Jupiter	W.	60 44 55	2013	62 38 9	2016	64 31 19	2019	66 24 24	2023
	Aldebaran	W.	44 52 15	2115	46 42 52	2110	48 33 36	2107	50 24 24	2105
	Regulus	E.	36 34 25	2013	34 41 11	2017	32 48 3	2023	30 55 4	2030
	Spica	E.	90 31 31	1995	88 37 49	1998	86 44 12	2001	84 50 40	2005
	Saturn	E.	92 46 30	2009	90 53 10	2011	88 59 53	2015	87 6 42	2019
21	α Arietis	W.	90 10 59	2078	92 2 32	2087	93 53 51	2096	95 44 56	2107
	Jupiter	W.	75 47 54	2054	77 40 4	2062	79 32 1	2072	81 23 44	2082
	Aldebaran	W.	59 38 21	2117	61 28 54	2123	63 19 18	2130	65 9 31	2137
	Spica	E.	75 24 59	2037	73 32 23	2046	71 40 0	2055	69 47 52	2065
	Saturn	E.	77 42 45	2051	75 50 30	2060	73 58 29	2069	72 6 42	2079
22	α Arietis	W.	104 56 4	2169	106 45 19	2183	108 34 12	2198	110 22 42	2214
	Jupiter	W.	90 38 6	2142	92 28 1	2155	94 17 36	2170	96 6 49	2184
	Aldebaran	W.	74 17 16	2189	76 6 0	2202	77 54 25	2215	79 42 30	2229
	Spica	E.	60 31 21	2125	58 41 0	2138	56 50 59	2153	55 1 20	2167
	Saturn	E.	62 52 3	2139	61 2 4	2154	59 12 27	2169	57 23 12	2183

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	JUPITER	W.	97° 55′ 40″	2200	99° 44′ 8″	2216	101° 32′ 11″	2233	103° 19′ 50″	2249
	Aldebaran	W.	81 30 15	2243	83 17 38	2259	85 4 38	2274	86 51 15	2291
	Pollux	W.	37 38 41	2186	39 27 30	2201	41 15 56	2217	43 3 58	2233
	Spica	E.	53 12 3	2182	51 23 9	2198	49 34 39	2214	47 46 33	2231
	SATURN	E.	55 34 19	2199	53 45 50	2216	51 57 46	2232	50 10 6	2249
	Antares	E.	99 5 22	2181	97 16 26	2196	95 27 53	2213	93 39 45	2229
	MARS	E.	105 52 35	2407	104 9 10	2424	102 26 9	2440	100 43 31	2457
24	Aldebaran	W.	95 38 8	2380	97 22 12	2398	99 5 50	2417	100 49 0	2436
	Pollux	W.	51 57 58	2320	53 43 29	2338	55 28 33	2356	57 13 11	2375
	Spica	E.	38 52 22	2320	37 6 51	2337	35 21 46	2356	33 37 8	2375
	SATURN	E.	41 18 23	2342	39 33 25	2362	37 48 56	2382	36 4 56	2403
	Antares	E.	84 45 20	2317	82 59 45	2335	81 14 36	2353	79 29 54	2373
	MARS	E.	92 16 34	2548	90 36 28	2568	88 56 49	2588	87 17 37	2607
25	Aldebaran	W.	109 17 52	2538	110 58 13	2559	112 38 5	2580	114 17 28	2601
	Pollux	W.	65 49 35	2470	67 31 31	2489	69 13 0	2508	70 54 2	2527
	Regulus	W.	29 13 10	2492	30 54 34	2510	32 35 34	2527	34 16 10	2543
	Antares	E.	70 53 14	2467	69 11 15	2487	67 29 43	2506	65 48 38	2525
	MARS	E.	79 8 24	2708	77 31 55	2729	75 55 53	2750	74 20 19	2770
	SUN	E.	127 58 31	2829	126 24 41	2848	124 51 16	2869	123 18 17	2889
26	Pollux	W.	79 12 40	2621	80 51 6	2639	82 29 8	2657	84 6 45	2675
	Regulus	W.	42 33 9	2632	44 11 20	2650	45 49 7	2668	47 26 30	2685
	Antares	E.	57 29 48	2619	55 51 19	2638	54 13 15	2656	52 35 36	2674
	MARS	E.	66 29 8	2871	64 56 12	2891	63 23 41	2911	61 51 36	2930
	SUN	E.	115 39 42	2987	114 9 13	3007	112 39 9	3026	111 9 29	3045
27	Pollux	W.	92 8 56	2761	93 44 15	2778	95 19 12	2793	96 53 49	2809
	Regulus	W.	55 27 45	2769	57 2 54	2785	58 37 42	2800	60 12 10	2815
	Antares	E.	44 33 14	2760	42 57 53	2776	41 22 54	2792	39 48 15	2808
	MARS	E.	54 17 13	3025	52 47 31	3043	51 18 11	3060	49 49 13	3078
	SUN	E.	103 46 54	3138	102 19 30	3154	100 52 26	3171	99 25 42	3188
28	Pollux	W.	104 41 57	2881	106 14 40	2895	107 47 5	2908	109 19 14	2920
	Regulus	W.	67 59 40	2887	69 32 16	2900	71 4 35	2912	72 36 38	2925
	MARS	E.	42 29 39	3162	41 2 44	3178	39 36 9	3194	38 9 53	3209
	SUN	E.	92 16 56	3266	90 52 5	3281	89 27 31	3294	88 3 13	3306
29	Regulus	W.	80 13 10	2980	81 43 48	2989	83 14 14	2999	84 44 28	3007
	Spica	W.	26 10 10	2978	27 40 50	2987	29 11 19	2996	30 41 37	3005
	SATURN	W.	24 2 4	3026	25 31 45	3030	27 1 20	3036	28 30 48	3041
	SUN	E.	81 5 28	3368	79 42 35	3379	78 19 55	3389	76 57 26	3400
30	Regulus	W.	92 13 8	3045	93 42 25	3051	95 11 35	3056	96 40 38	3061
	Spica	W.	38 10 37	3041	39 39 59	3047	41 9 14	3052	42 38 22	3057
	SATURN	W.	35 56 38	3065	37 25 30	3069	38 54 17	3073	40 22 59	3078
	SUN	E.	70 7 37	3440	68 46 6	3447	67 24 43	3454	66 3 27	3459
31	Spica	W.	50 2 40	3076	51 31 19	3079	52 59 54	3081	54 28 27	3083
	SATURN	W.	47 45 25	3091	49 13 45	3094	50 42 2	3096	52 10 17	3098
	SUN	E.	59 18 36	3482	57 57 52	3486	56 37 12	3488	55 16 35	3491

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.	Midnight.	P. L. of Diff.	XV^{h.}	P. L. of Diff.	XVIII^{h.}	P. L. of Diff.	XXI^{h.}	P. L. of Diff.
23	Jupiter W.	105° 7′ 5″	2266	106° 53′ 54″	2284	108° 40′ 17″	2302	110° 26′ 14″	2320
	Aldebaran W.	88 37 28	2308	90 23 16	2325	92 8 39	2342	93 53 37	2361
	Pollux W.	44 51 36	2250	46 38 49	2266	48 25 38	2284	50 12 1	2302
	Spica E.	45 58 51	2248	44 11 35	2265	42 24 44	2283	40 38 20	2301
	Saturn E.	48 22 52	2267	46 36 4	2285	44 49 43	2304	43 3 49	2323
	Antares E.	91 52 1	2246	90 4 42	2264	88 17 49	2281	86 31 22	2298
	Mars E.	99 1 17	2475	97 19 28	2492	95 38 4	2511	93 57 6	2530
24	Aldebaran W.	102 31 43	2456	104 13 58	2477	105 55 44	2497	107 37 2	2517
	Pollux W.	58 57 22	2394	60 41 6	2412	62 24 23	2432	64 7 12	2450
	Spica E.	31 52 58	2395	30 9 16	2414	28 26 1	2433	26 43 14	2453
	Saturn E.	34 21 26	2425	32 38 27	2446	30 55 58	2469	29 14 1	2491
	Antares E.	77 45 40	2391	76 1 53	2410	74 18 33	2429	72 35 40	2448
	Mars E.	85 38 52	2627	84 0 34	2647	82 22 43	2668	80 45 20	2688
25	Aldebaran W.	115 56 22	2622	117 34 47	2643	119 12 44	2665	120 50 11	2687
	Pollux W.	72 34 38	2545	74 14 48	2565	75 54 31	2584	77 33 48	2602
	Regulus W.	35 56 23	2561	37 36 11	2579	39 15 35	2597	40 54 34	2615
	Antares E.	64 8 0	2544	62 27 48	2563	60 48 2	2582	59 8 42	2601
	Mars E.	72 45 12	2791	71 10 32	2811	69 36 18	2831	68 2 30	2851
	Sun E.	121 45 44	2909	120 13 36	2928	118 41 53	2948	117 10 35	2968
26	Pollux W.	85 43 58	2693	87 20 47	2710	88 57 13	2728	90 33 16	2745
	Regulus W.	49 3 30	2702	50 40 7	2719	52 16 22	2736	53 52 14	2752
	Antares E.	50 58 21	2692	49 21 30	2709	47 45 2	2726	46 8 57	2743
	Mars E.	60 19 55	2950	58 48 39	2969	57 17 47	2987	55 47 18	3006
	Sun E.	109 40 12	3065	108 11 19	3082	106 42 48	3101	105 14 40	3119
27	Pollux W.	98 28 5	2825	100 2 1	2839	101 35 38	2853	103 8 57	2868
	Regulus W.	61 46 18	2830	63 20 7	2845	64 53 36	2859	66 26 47	2873
	Antares E.	38 13 57	2823	36 39 59	2838	35 6 20	2852	33 33 0	2866
	Mars E.	48 20 37	3096	46 52 22	3112	45 24 27	3129	43 56 53	3146
	Sun E.	97 59 19	3204	96 33 15	3221	95 7 31	3236	93 42 5	3251
28	Pollux W.	110 51 8	2932	112 22 46	2943	113 54 10	2954	115 25 20	2965
	Regulus W.	74 8 25	2937	75 39 57	2948	77 11 15	2959	78 42 19	2969
	Mars E.	36 43 55	3225	35 18 16	3241	33 52 55	3255	32 27 51	3270
	Sun E.	86 39 11	3321	85 15 24	3334	83 51 52	3345	82 28 33	3358
29	Regulus W.	86 14 32	3016	87 44 25	3024	89 14 8	3031	90 43 42	3038
	Spica W.	32 11 44	3013	33 41 41	3021	35 11 28	3027	36 41 7	3034
	Saturn W.	30 0 10	3046	31 29 26	3051	32 58 36	3056	34 27 40	3060
	Sun E.	75 35 9	3408	74 13 2	3416	72 51 4	3425	71 29 16	3433
30	Regulus W.	98 9 35	3066	99 38 26	3071	101 7 11	3075	102 35 51	3078
	Spica W.	44 7 24	3062	45 36 20	3066	47 5 11	3069	48 33 58	3073
	Saturn W.	41 51 36	3081	43 20 9	3084	44 48 38	3087	46 17 3	3090
	Sun E.	64 42 17	3465	63 21 14	3470	62 0 16	3475	60 39 24	3479
31	Spica W.	55 56 57	3084	57 25 26	3086	58 53 53	3086	60 22 20	3087
	Saturn W.	53 38 31	3097	55 6 44	3098	56 34 56	3098	58 3 8	3098
	Sun E.	53 56 1	3493	52 35 29	3495	51 14 59	3497	49 54 31	3497

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	21 0 34.71	10.181	S. 17 0 57.1	+42.94	16 15.96	68.23	13 49.80	0.323
Frid.	2	21 4 38.64	10.147	16 43 37.5	43.68	16 15.81	68.12	13 57.15	0.290
Sat.	3	21 8 41.75	10.113	16 26 0.3	44.41	16 15.65	68.00	14 3.69	0.256
SUN.	4	21 12 44.05	10.079	16 8 6.0	+45.12	16 15.49	67.89	14 9.42	0.222
Mon.	5	21 16 45.54	10.045	15 49 55.0	45.80	16 15.32	67.78	14 14.34	0.188
Tues.	6	21 20 46.22	10.011	15 31 27.6	46.47	16 15.15	67.66	14 18.46	0.154
Wed.	7	21 24 46.08	9.977	15 12 44.5	+47.12	16 14.98	67.54	14 21.75	0.120
Thur.	8	21 28 45.13	9.944	14 53 45.9	47.75	16 14.81	67.43	14 24.24	0.087
Frid.	9	21 32 43.38	9.011	14 34 32.4	48.37	16 14.64	67.32	14 25.92	0.053
Sat.	10	21 36 40.82	9.877	14 15 4.4	+48.97	16 14.46	67.21	14 26.81	0.020
SUN.	11	21 40 37.47	9.844	13 55 22.2	49.54	16 14.28	67.10	14 26.90	0.012
Mon.	12	21 44 33.34	9.811	13 35 26.5	50.10	16 14.09	66.99	14 26.21	0.045
Tues.	13	21 48 28.42	9.779	13 15 17.5	+50.64	16 13.91	66.88	14 24.74	0.077
Wed.	14	21 52 22.74	9.748	12 54 55.7	51.17	16 13.71	66.78	14 22.51	0.108
Thur.	15	21 56 16.30	9.716	12 34 21.6	51.67	16 13.52	66.67	14 19.53	0.139
Frid.	16	22 0 9.13	9.686	12 13 35.5	+52.16	16 13.32	66.57	14 15.81	0.170
Sat.	17	22 4 1.23	9.656	11 52 37.8	52.63	16 13.11	66.47	14 11.37	0.200
SUN.	18	22 7 52.62	9.627	11 31 29.0	53.08	16 12.91	66.38	14 6.22	0.229
Mon.	19	22 11 43.32	9.598	11 10 9.4	+53.53	16 12.69	66.28	14 0.38	0.257
Tues.	20	22 15 33.34	9.571	10 48 39.5	53.96	16 12.48	66.18	13 53.86	0.285
Wed.	21	22 19 22.71	9.544	10 26 59.6	54.37	16 12.26	66.09	13 46.70	0.312
Thur.	22	22 23 11.44	9.518	10 5 10.0	+54.76	16 12.03	66.00	13 38.90	0.338
Frid.	23	22 26 59.56	9.493	9 43 11.2	55.13	16 11.80	65.91	13 30.49	0.363
Sat.	24	22 30 47.08	9.468	9 21 3.5	55.49	16 11.57	65.82	13 21.48	0.387
SUN.	25	22 34 34.02	9.444	8 58 47.4	+55.83	16 11.33	65.74	13 11.89	0.411
Mon.	26	22 38 20.41	9.421	8 36 23.2	56.16	16 11.09	65.66	13 1.75	0.434
Tues.	27	22 42 6.25	9.399	8 13 51.2	56.48	16 10.84	65.58	12 51.06	0.456
Wed.	28	22 45 51.57	9.378	7 51 11.9	56.78	16 10.60	65.50	12 39.86	0.477
Thur.	29	22 49 36.38	9.357	S. 7 28 25.7	+57.06	16 10.35	65.42	12 28.15	0.498

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	21 0 32.36	10.181	S. 17 1 7.0	+42.93	13 49.72	0.323	20 46 42.64
Frid.	2	21 4 36.28	10.147	16 43 47.7	43.67	13 57.09	0.290	20 50 39.19
Sat.	3	21 8 39.38	10.113	16 26 10.8	44.40	14 3.63	0.256	20 54 35.75
SUN.	4	21 12 41.68	10.079	16 8 16.7	+45.11	14 9.37	0.223	20 58 32.31
Mon.	5	21 16 43.16	10.045	15 50 5.9	45.79	14 14.30	0.189	21 2 28.86
Tues.	6	21 20 43.84	10.011	15 31 38.8	46.46	14 18.42	0.155	21 6 25.42
Wed.	7	21 24 43.69	9.977	15 12 55.8	+47.11	14 21.72	0.121	21 10 21.97
Thur.	8	21 28 42.75	9.944	14 53 57.5	47.74	14 24.22	0.088	21 14 18.53
Frid.	9	21 32 41.00	9.911	14 34 44.1	48.36	14 25.91	0.054	21 18 15.08
Sat.	10	21 36 38.45	9.877	14 15 16.2	+48.96	14 26.81	0.021	21 22 11.64
SUN.	11	21 40 35.10	9.844	13 55 34.2	49.53	14 26.91	0.012	21 26 8.20
Mon.	12	21 44 30.98	9.811	13 35 38.6	50.09	14 26.23	0.045	21 30 4.75
Tues.	13	21 48 26.07	9.779	13 15 29.8	+50.64	14 24.76	0.077	21 34 1.31
Wed.	14	21 52 20.40	9.748	12 55 8.1	51.17	14 22.54	0.108	21 37 57.86
Thur.	15	21 56 13.98	9.717	12 34 34.0	51.67	14 19.56	0.139	21 41 54.42
Frid.	16	22 0 6.82	9.687	12 13 48.0	+52.16	14 15.85	0.170	21 45 50.97
Sat.	17	22 3 58.94	9.657	11 52 50.4	52.63	14 11.42	0.200	21 49 47.53
SUN.	18	22 7 50.35	9.628	11 31 41.6	53.08	14 6.27	0.229	21 53 44.08
Mon.	19	22 11 41.08	9.599	11 10 22.0	+53.53	14 0.44	0.257	21 57 40.64
Tues.	20	22 15 31.12	9.572	10 48 52.1	53.96	13 53.93	0.285	22 1 37.19
Wed.	21	22 19 20.52	9.545	10 27 12.1	54.37	13 46.77	0.312	22 5 33.75
Thur.	22	22 23 9.28	9.519	10 5 22.5	+54.76	13 38.98	0.338	22 9 30.30
Frid.	23	22 26 57.43	9.494	9 43 23.7	55.14	13 30.57	0.363	22 13 26.86
Sat.	24	22 30 44.98	9.470	9 21 16.0	55.50	13 21.57	0.387	22 17 23.41
SUN.	25	22 34 31.95	9.446	8 58 59.8	+55.84	13 11.98	0.411	22 21 19.96
Mon.	26	22 38 18.36	9.423	8 36 35.4	56.17	13 1.84	0.434	22 25 16.52
Tues.	27	22 42 4.24	9.401	8 14 3.4	56.49	12 51.16	0.456	22 29 13.07
Wed.	28	22 45 49.59	9.379	7 51 24.0	56.79	12 39.96	0.477	22 33 9.63
Thur.	29	22 49 34.43	9.358	S. 7 28 37.7	+57.07	12 28.25	0.498	22 37 6.18

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing.

Diff. for 1 Hour, $+9^s.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	THE SUN'S Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	32	312 40 20.7	40 19.0	152.19	− 0.65	9.9937413	+28.6	3 12 45.70
2	33	313 41 12.8	41 10.9	152.15	0.68	9.9938107	29.2	3 8 49.79
3	34	314 42 4.0	42 2.0	152.11	0.68	9.9938815	29.8	3 4 53.88
4	35	315 42 54.2	42 52.0	152.06	− 0.64	9.9939536	+30.3	3 0 57.97
5	36	316 43 43.2	43 40.9	152.01	0.58	9.9940269	30.8	2 57 2.06
6	37	317 44 31.0	44 28.5	151.96	0.50	9.9941014	31.3	2 53 6.15
7	38	318 45 17.4	45 14.8	151.91	− 0.40	9.9941772	+31.8	2 49 10.24
8	39	319 46 2.4	45 59.6	151.84	0.28	9.9942541	32.3	2 45 14.33
9	40	320 46 45.9	46 43.0	151.78	0.15	9.9943321	32.8	2 41 18.42
10	41	321 47 27.9	47 24.8	151.72	− 0.01	9.9944115	+33.4	2 37 22.51
11	42	322 48 8.1	48 4.9	151.64	+ 0.13	9.9944924	34.0	2 33 26.60
12	43	323 48 46.7	48 43.4	151.56	0.24	9.9945746	34.6	2 29 30.69
13	44	324 49 23.5	49 20.0	151.50	+ 0.35	9.9946583	+35.2	2 25 34.78
14	45	325 49 58.6	49 55.0	151.43	0.43	9.9947437	36.0	2 21 38.87
15	46	326 50 32.0	50 28.3	151.35	0.47	9.9948310	36.7	2 17 42.96
16	47	327 51 3.5	50 59.6	151.28	+ 0.49	9.9949199	+37.5	2 13 47.05
17	48	328 51 33.3	51 29.3	151.21	0.48	9.9950110	38.3	2 9 51.14
18	49	329 52 1.4	51 57.3	151.13	0.43	9.9951039	39.1	2 5 55.23
19	50	330 52 27.8	52 23.5	151.07	+ 0.37	9.9951989	+40.0	2 1 59.32
20	51	331 52 52.4	52 48.0	151.00	0.28	9.9952958	40.8	1 58 3.41
21	52	332 53 15.5	53 11.0	150.93	0.17	9.9953947	41.6	1 54 7.50
22	53	333 53 36.9	53 32.2	150.86	+ 0.05	9.9954956	+42.4	1 50 11.60
23	54	334 53 56.8	53 52.0	150.80	− 0.09	9.9955983	43.1	1 46 15.69
24	55	335 54 15.3	54 10.4	150.74	0.22	9.9957027	43.9	1 42 19.78
25	56	336 54 32.2	54 27.2	150.67	− 0.34	9.9958088	+44.5	1 38 23.87
26	57	337 54 47.7	54 42.5	150.61	0.46	9.9959164	45.1	1 34 27.96
27	58	338 55 1.7	54 56.4	150.55	0.55	9.9960253	45.6	1 30 32.05
28	59	339 55 14.3	55 8.9	150.49	0.61	9.9961354	46.1	1 26 36.14
29	60	340 55 25.2	55 19.7	150.42	− 0.65	9.9962464	+46.4	1 22 40.24

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^{d}.0$.

Diff. for 1 Hour,
— $9^{s}.8296$.
(Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 45.1	14 44.9	54 1.4	−0.15	54 0.7	+0.03	21 32.0	2.15	25.4
2	14 45.2	14 46.1	54 2.0	+0.18	54 5.1	0.33	22 23.3	2.12	26.4
3	14 47.3	14 49.0	54 9.8	0.45	54 15.9	0.57	23 13.3	2.04	27.4
4	14 51.0	14 53.4	54 23.4	+0.68	54 32.1	+0.77	☌		28.4
5	14 56.1	14 58.9	54 41.8	0.85	54 52.4	0.93	0 1.3	1.95	29.4
6	15 2.1	15 5.4	55 4.0	0.99	55 16.2	1.04	0 47.1	1.86	0.6
7	15 8.9	15 12.6	55 29.0	+1.09	55 42.4	+1.15	1 31.0	1.80	1.6
8	15 16.4	15 20.4	55 56.6	1.20	56 11.2	1.24	2 13.6	1.77	2.6
9	15 24.5	15 28.8	56 26.3	1.28	56 42.0	1.33	2 56.1	1.78	3.6
10	15 33.2	15 37.8	56 58.3	+1.38	57 15.0	+1.41	3 39.5	1.85	4.6
11	15 42.4	15 47.2	57 32.1	1.45	57 49.7	1.48	4 25.3	1.97	5.6
12	15 52.1	15 56.9	58 7.5	1.49	58 25.4	1.49	5 14.6	2.15	6.6
13	16 1.8	16 6.6	58 43.3	+1.48	59 0.8	+1.43	6 8.8	2.36	7.6
14	16 11.1	16 15.4	59 17.6	1.35	59 33.3	1.25	7 8.0	2.56	8.6
15	16 19.3	16 22.7	59 47.6	1.11	60 0.0	0.94	8 11.5	2.70	9.6
16	16 25.5	16 27.5	60 10.2	+0.73	60 17.6	+0.49	9 16.6	2.70	10.6
17	16 28.7	16 28.9	60 22.0	+0.23	60 23.0	−0.07	10 20.2	2.57	11.6
18	16 28.2	16 26.5	60 20.4	−0.37	60 14.1	0.68	11 19.7	2.38	12.6
19	16 23.8	16 20.2	60 4.1	−0.98	59 50.7	−1.25	12 14.5	2.18	13.6
20	16 15.6	16 10.3	59 34.0	1.51	59 14.5	1.72	13 4.9	2.02	14.6
21	16 4.4	15 57.9	58 52.7	1.90	58 29.0	2.03	13 52.1	1.92	15.6
22	15 51.1	15 44.1	58 4.0	−2.11	57 38.4	−2.14	14 37.5	1.87	16.6
23	15 37.1	15 30.2	57 12.6	2.13	56 47.2	2.08	15 22.4	1.88	17.6
24	15 23.5	15 17.2	56 22.7	1.99	55 59.5	1.87	16 7.8	1.91	18.6
25	15 11.3	15 6.0	55 37.9	−1.72	55 18.3	−1.55	16 54.5	1.98	19.6
26	15 1.3	14 57.1	55 0.8	1.36	54 45.7	1.15	17 43.0	2.06	20.6
27	14 53.7	14 51.0	54 33.2	0.94	54 23.2	0.73	18 33.3	2.12	21.6
28	14 49.0	14 47.7	54 15.8	0.50	54 11.1	−0.29	19 24.7	2.15	22.6
29	14 47.1	14 47.2	54 8.9	−0.08	54 9.3	+0.13	20 16.2	2.13	23.6

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 1.					SATURDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 34 7.47	2.2236	S.28 8 30.6	2.136	0	19 21 10.37	2.2072	S.27 13 40.0	4.396
1	17 36 20.93	2.2250	28 10 34.7	2.001	1	19 23 22.74	2.2050	27 9 12.3	4.527
2	17 38 34.47	2.2263	28 12 30.7	1.865	2	19 25 34.97	2.2028	27 4 36.8	4.657
3	17 40 48.09	2.2277	28 14 18.5	1.729	3	19 27 47.07	2.2005	26 59 53.4	4.788
4	17 43 1.79	2.2290	28 15 58.2	1.594	4	19 29 59.03	2.1982	26 55 2.2	4.918
5	17 45 15.57	2.2302	28 17 29.8	1.458	5	19 32 10.85	2.1958	26 50 3.2	5.048
6	17 47 29.42	2.2313	28 18 53.2	1.322	6	19 34 22.52	2.1933	26 44 56.4	5.177
7	17 49 43.33	2.2323	28 20 8.4	1.185	7	19 36 34.04	2.1908	26 39 41.9	5.306
8	17 51 57.29	2.2332	28 21 15.4	1.049	8	19 38 45.41	2.1883	26 34 19.7	5.434
9	17 54 11.31	2.2341	28 22 14.3	0.913	9	19 40 56.63	2.1857	26 28 49.8	5.562
10	17 56 25.38	2.2349	28 23 5.0	0.776	10	19 43 7.69	2.1829	26 23 12.3	5.689
11	17 58 39.49	2.2356	28 23 47.4	0.639	11	19 45 18.58	2.1802	26 17 27.2	5.816
12	18 0 53.65	2.2362	28 24 21.6	0.502	12	19 47 29.31	2.1774	26 11 34.4	5.942
13	18 3 7.84	2.2367	28 24 47.6	0.364	13	19 49 39.87	2.1746	26 5 34.1	6.067
14	18 5 22.06	2.2372	28 25 5.3	0.227	14	19 51 50.26	2.1717	25 59 26.3	6.192
15	18 7 36.31	2.2376	28 25 14.8	−0.089	15	19 54 0.47	2.1688	25 53 11.1	6.316
16	18 9 50.58	2.2379	28 25 16.0	+0.048	16	19 56 10.51	2.1658	25 46 48.4	6.440
17	18 12 4.86	2.2382	28 25 9.0	0.186	17	19 58 20.37	2.1628	25 40 18.3	6.563
18	18 14 19.16	2.2383	28 24 53.7	0.323	18	20 0 30.05	2.1598	25 33 40.8	6.686
19	18 16 33.46	2.2384	28 24 30.2	0.461	19	20 2 39.54	2.1567	25 26 56.0	6.807
20	18 18 47.77	2.2385	28 23 58.4	0.599	20	20 4 48.85	2.1536	25 20 3.9	6.928
21	18 21 2.08	2.2384	28 23 18.3	0.737	21	20 6 57.97	2.1504	25 13 4.6	7.048
22	18 23 16.38	2.2382	28 22 30.0	0.874	22	20 9 6.90	2.1471	25 5 58.1	7.168
23	18 25 30.67	2.2380	S.28 21 33.4	1.012	23	20 11 15.63	2.1438	S.24 58 44.4	7.288
	FRIDAY 2.					SUNDAY 4.			
0	18 27 44.94	2.2377	S.28 20 28.6	1.149	0	20 13 24.16	2.1405	S.24 51 23.5	7.407
1	18 29 59.19	2.2372	28 19 15.5	1.286	1	20 15 32.49	2.1372	24 43 55.5	7.525
2	18 32 13.41	2.2367	28 17 54.2	1.423	2	20 17 40.63	2.1340	24 36 20.5	7.641
3	18 34 27.60	2.2362	28 16 24.7	1.561	3	20 19 48.57	2.1306	24 28 38.6	7.757
4	18 36 41.76	2.2357	28 14 46.9	1.698	4	20 21 56.31	2.1272	24 20 49.7	7.873
5	18 38 55.88	2.2349	28 13 0.9	1.835	5	20 24 3.84	2.1238	24 12 53.8	7.989
6	18 41 9.95	2.2341	28 11 6.7	1.972	6	20 26 11.17	2.1204	24 4 51.0	8.104
7	18 43 23.97	2.2332	28 9 4.3	2.108	7	20 28 18.29	2.1169	23 56 41.3	8.217
8	18 45 37.94	2.2323	28 6 53.7	2.245	8	20 30 25.20	2.1135	23 48 24.9	8.329
9	18 47 51.85	2.2313	28 4 34.9	2.382	9	20 32 31.91	2.1100	23 40 1.8	8.441
10	18 50 5.70	2.2302	28 2 7.9	2.518	10	20 34 38.40	2.1064	23 31 32.0	8.552
11	18 52 19.48	2.2290	27 59 32.7	2.654	11	20 36 44.68	2.1029	23 22 55.5	8.663
12	18 54 33.18	2.2277	27 56 49.4	2.789	12	20 38 50.75	2.0993	23 14 12.4	8.773
13	18 56 46.81	2.2264	27 53 58.0	2.925	13	20 40 56.60	2.0957	23 5 22.8	8.882
14	18 59 0.35	2.2250	27 50 58.4	3.061	14	20 43 2.24	2.0922	22 56 26.6	8.991
15	19 1 13.81	2.2236	27 47 50.7	3.195	15	20 45 7.67	2.0887	22 47 23.9	9.096
16	19 3 27.18	2.2220	27 44 35.0	3.329	16	20 47 12.88	2.0851	22 38 14.8	9.204
17	19 5 40.45	2.2204	27 41 11.2	3.464	17	20 49 17.88	2.0815	22 28 59.4	9.309
18	19 7 53.63	2.2187	27 37 39.3	3.598	18	20 51 22.66	2.0779	22 19 37.7	9.414
19	19 10 6.70	2.2169	27 33 59.4	3.732	19	20 53 27.22	2.0743	22 10 9.7	9.518
20	19 12 19.66	2.2151	27 30 11.5	3.866	20	20 55 31.57	2.0707	22 0 35.5	9.622
21	19 14 32.52	2.2133	27 26 15.5	3.999	21	20 57 35.70	2.0670	21 50 55.0	9.726
22	19 16 45.26	2.2113	27 22 11.6	4.131	22	20 59 39.61	2.0633	21 41 8.4	9.827
23	19 18 57.88	2.2093	27 17 59.8	4.263	23	21 1 43.30	2.0597	21 31 15.8	9.927
24	19 21 10.37	2.2072	S.27 13 40.0	4.396	24	21 3 46.78	2.0562	S.21 21 17.1	10.027

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 5.					**WEDNESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	21 3 46.78	2.0563	S. 21 21 17.1	10.027	0	22 38 41.76	1.9115	S. 11 41 32.3	13.781
1	21 5 50.04	2.0526	21 11 12.5	10.126	1	22 40 36.39	1.9095	11 27 43.8	13.836
2	21 7 53.09	2.0490	21 1 2.0	10.225	2	22 42 30.90	1.9076	11 13 52.0	13.891
3	21 9 55.92	2.0454	20 50 45.5	10.323	3	22 44 25.30	1.9057	10 59 56.9	13.945
4	21 11 58.54	2.0418	20 40 23.2	10.419	4	22 46 19.59	1.9039	10 45 58.6	13.997
5	21 14 0.94	2.0382	20 29 55.2	10.514	5	22 48 13.77	1.9022	10 31 57.2	14.049
6	21 16 3.13	2.0347	20 19 21.5	10.608	6	22 50 7.85	1.9005	10 17 52.7	14.100
7	21 18 5.11	2.0312	20 8 42.2	10.703	7	22 52 1.83	1.8988	10 3 45.2	14.151
8	21 20 6.88	2.0277	19 57 57.2	10.797	8	22 53 55.71	1.8972	9 49 34.6	14.201
9	21 22 8.43	2.0241	19 47 6.6	10.889	9	22 55 49.49	1.8956	9 35 21.1	14.248
10	21 24 9.77	2.0206	19 36 10.5	10.980	10	22 57 43.18	1.8942	9 21 4.8	14.295
11	21 26 10.90	2.0172	19 25 9.0	11.070	11	22 59 36.79	1.8928	9 6 45.7	14.342
12	21 28 11.83	2.0137	19 14 2.1	11.159	12	23 1 30.32	1.8915	8 52 23.8	14.388
13	21 30 12.55	2.0102	19 2 49.9	11.248	13	23 3 23.77	1.8903	8 37 59.2	14.432
14	21 32 13.06	2.0068	18 51 32.3	11.337	14	23 5 17.15	1.8891	8 23 32.0	14.475
15	21 34 13.37	2.0035	18 40 9.5	11.423	15	23 7 10.46	1.8879	8 9 2.2	14.517
16	21 36 13.48	2.0002	18 28 41.5	11.509	16	23 9 3.70	1.8868	7 54 29.9	14.559
17	21 38 13.39	1.9968	18 17 8.4	11.594	17	23 10 56.87	1.8857	7 39 55.1	14.600
18	21 40 13.09	1.9934	18 5 30.2	11.678	18	23 12 49.98	1.8847	7 25 17.9	14.640
19	21 42 12.59	1.9901	17 53 47.0	11.762	19	23 14 43.04	1.8839	7 10 38.3	14.679
20	21 44 11.90	1.9869	17 41 58.8	11.845	20	23 16 36.05	1.8831	6 55 56.4	14.717
21	21 46 11.02	1.9837	17 30 5.6	11.927	21	23 18 29.01	1.8823	6 41 12.3	14.753
22	21 48 9.95	1.9805	17 18 7.6	12.007	22	23 20 21.93	1.8817	6 26 26.0	14.789
23	21 50 8.68	1.9773	S. 17 6 4.8	12.087	23	23 22 14.81	1.8811	S. 6 11 37.6	14.824
	TUESDAY 6.					**THURSDAY 8.**			
0	21 52 7.22	1.9742	S. 16 53 57.2	12.166	0	23 24 7.66	1.8806	S. 5 56 47.1	14.858
1	21 54 5.58	1.9711	16 41 44.9	12.243	1	23 26 0.48	1.8801	5 41 54.6	14.891
2	21 56 3.75	1.9680	16 29 28.0	12.320	2	23 27 53.27	1.8796	5 27 0.2	14.924
3	21 58 1.74	1.9650	16 17 6.5	12.396	3	23 29 46.03	1.8793	5 12 3.8	14.956
4	21 59 59.55	1.9620	16 4 40.5	12.471	4	23 31 38.78	1.8791	4 57 5.5	14.986
5	22 1 57.18	1.9590	15 52 10.0	12.546	5	23 33 31.52	1.8789	4 42 5.5	15.014
6	22 3 54.63	1.9561	15 39 35.0	12.619	6	23 35 24.25	1.8787	4 27 3.8	15.043
7	22 5 51.91	1.9533	15 26 55.7	12.691	7	23 37 16.97	1.8787	4 12 0.4	15.071
8	22 7 49.02	1.9505	15 14 12.1	12.762	8	23 39 9.70	1.8788	3 56 55.3	15.097
9	22 9 45.97	1.9477	15 1 24.2	12.833	9	23 41 2.43	1.8789	3 41 48.7	15.122
10	22 11 42.75	1.9449	14 48 32.1	12.903	10	23 42 55.17	1.8791	3 26 40.6	15.147
11	22 13 39.36	1.9422	14 35 35.9	12.972	11	23 44 47.92	1.8793	3 11 31.1	15.170
12	22 15 35.81	1.9395	14 22 35.5	13.040	12	23 46 40.68	1.8796	2 56 20.2	15.192
13	22 17 32.10	1.9369	14 9 31.1	13.106	13	23 48 33.47	1.8801	2 41 8.0	15.214
14	22 19 28.24	1.9344	13 56 22.8	13.172	14	23 50 26.29	1.8806	2 25 54.5	15.235
15	22 21 24.23	1.9319	13 43 10.5	13.238	15	23 52 19.14	1.8811	2 10 39.8	15.254
16	22 23 20.07	1.9294	13 29 54.3	13.302	16	23 54 12.02	1.8817	1 55 24.0	15.273
17	22 25 15.76	1.9270	13 16 34.3	13.364	17	23 56 4.94	1.8824	1 40 7.0	15.292
18	22 27 11.31	1.9247	13 3 10.6	13.426	18	23 57 57.91	1.8832	1 24 49.0	15.308
19	22 29 6.72	1.9224	12 49 43.2	13.487	19	23 59 50.93	1.8841	1 9 30.1	15.323
20	22 31 1.99	1.9201	12 36 12.1	13.548	20	0 1 44.00	1.8850	0 54 10.2	15.338
21	22 32 57.13	1.9178	12 22 37.4	13.607	21	0 3 37.13	1.8860	0 38 49.5	15.352
22	22 34 52.13	1.9157	12 8 59.2	13.666	22	0 5 30.32	1.8872	0 23 28.0	15.364
23	22 36 47.01	1.9136	11 55 17.5	13.724	23	0 7 23.59	1.8884	S. 0 8 5.8	15.375
24	22 38 41.76	1.9115	S. 11 41 32.3	13.781	24	0 9 16.93	1.8897	N. 0 7 17.0	15.385

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 9 16.93	1.8897	N. 0 7 17.0	15.385
1	0 11 10.35	1.8910	0 22 40.4	15.395
2	0 13 3.85	1.8923	0 38 4.4	15.405
3	0 14 57.43	1.8938	0 53 29.0	15.413
4	0 16 51.10	1.8954	1 8 54.0	15.419
5	0 18 44.88	1.8971	1 24 19.3	15.424
6	0 20 38.76	1.8989	1 39 44.9	15.429
7	0 22 32.75	1.9007	1 55 10.8	15.432
8	0 24 26.85	1.9026	2 10 36.8	15.434
9	0 26 21.06	1.9046	2 26 2.9	15.436
10	0 28 15.40	1.9067	2 41 29.1	15.437
11	0 30 9.87	1.9088	2 56 55.3	15.436
12	0 32 4.46	1.9110	3 12 21.4	15.434
13	0 33 59.19	1.9133	3 27 47.3	15.431
14	0 35 54.06	1.9157	3 43 13.1	15.427
15	0 37 49.08	1.9183	3 58 38.6	15.422
16	0 39 44.26	1.9210	4 14 3.8	15.416
17	0 41 39.60	1.9237	4 29 28.5	15.408
18	0 43 35.10	1.9264	4 44 52.7	15.399
19	0 45 30.76	1.9292	5 0 16.4	15.391
20	0 47 26.60	1.9321	5 15 39.6	15.381
21	0 49 22.61	1.9350	5 31 2.1	15.369
22	0 51 18.80	1.9382	5 46 23.8	15.356
23	0 53 15.19	1.9414	N. 6 1 44.8	15.342

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 55 11.77	1.9447	N. 6 17 4.9	15.327
1	0 57 8.55	1.9480	6 32 24.0	15.311
2	0 59 5.53	1.9514	6 47 42.2	15.294
3	1 1 2.72	1.9549	7 2 59.3	15.275
4	1 3 0.12	1.9585	7 18 15.2	15.255
5	1 4 57.74	1.9623	7 33 29.9	15.234
6	1 6 55.59	1.9661	7 48 43.3	15.212
7	1 8 53.67	1.9699	8 3 55.4	15.189
8	1 10 51.98	1.9738	8 19 6.0	15.164
9	1 12 50.53	1.9779	8 34 15.1	15.138
10	1 14 49.33	1.9821	8 49 22.6	15.112
11	1 16 48.38	1.9863	9 4 28.5	15.083
12	1 18 47.69	1.9907	9 19 32.6	15.053
13	1 20 47.26	1.9951	9 34 34.9	15.023
14	1 22 47.10	1.9995	9 49 35.4	14.992
15	1 24 47.20	2.0040	10 4 33.9	14.958
16	1 26 47.58	2.0087	10 19 30.4	14.924
17	1 28 48.24	2.0134	10 34 24.8	14.888
18	1 30 49.19	2.0182	10 49 17.0	14.851
19	1 32 50.43	2.0232	11 4 6.9	14.812
20	1 34 51.97	2.0282	11 18 54.5	14.773
21	1 36 53.81	2.0332	11 33 39.7	14.732
22	1 38 55.96	2.0384	11 48 22.4	14.690
23	1 40 58.42	2.0437	12 3 2.5	14.647
24	1 43 1.20	2.0491	N.12 17 40.0	14.602

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 43 1.20	2.0491	N.12 17 40.0	14.602
1	1 45 4.31	2.0545	12 32 14.7	14.555
2	1 47 7.74	2.0599	12 46 46.6	14.507
3	1 49 11.50	2.0655	13 1 15.6	14.458
4	1 51 15.60	2.0712	13 15 41.6	14.407
5	1 53 20.05	2.0770	13 30 4.5	14.355
6	1 55 24.84	2.0828	13 44 24.2	14.302
7	1 57 29.99	2.0887	13 58 40.7	14.248
8	1 59 35.49	2.0947	14 12 53.9	14.192
9	2 1 41.35	2.1008	14 27 3.7	14.134
10	2 3 47.58	2.1070	14 41 10.0	14.075
11	2 5 54.19	2.1132	14 55 12.7	14.013
12	2 8 1.17	2.1195	15 9 11.6	13.951
13	2 10 8.53	2.1258	15 23 6.8	13.888
14	2 12 16.27	2.1323	15 36 58.2	13.823
15	2 14 24.41	2.1390	15 50 45.6	13.756
16	2 16 32.95	2.1457	16 4 28.9	13.687
17	2 18 41.89	2.1523	16 18 8.1	13.618
18	2 20 51.23	2.1590	16 31 43.1	13.547
19	2 23 0.97	2.1658	16 45 13.7	13.473
20	2 25 11.13	2.1728	16 58 39.9	13.399
21	2 27 21.71	2.1798	17 12 1.6	13.323
22	2 29 32.71	2.1868	17 25 18.7	13.246
23	2 31 44.13	2.1939	N.17 38 31.1	13.167

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 33 55.98	2.2011	N.17 51 38.7	13.086
1	2 36 8.26	2.2083	18 4 41.4	13.003
2	2 38 20.98	2.2157	18 17 39.1	12.919
3	2 40 34.14	2.2230	18 30 31.7	12.833
4	2 42 47.74	2.2304	18 43 19.1	12.746
5	2 45 1.79	2.2379	18 56 1.2	12.656
6	2 47 16.29	2.2455	19 8 37.8	12.564
7	2 49 31.25	2.2531	19 21 8.9	12.472
8	2 51 46.66	2.2607	19 33 34.5	12.379
9	2 54 2.53	2.2683	19 45 54.4	12.283
10	2 56 18.86	2.2761	19 58 8.4	12.184
11	2 58 35.66	2.2839	20 10 16.5	12.085
12	3 0 52.93	2.2917	20 22 18.6	11.984
13	3 3 10.67	2.2996	20 34 14.6	11.881
14	3 5 28.88	2.3075	20 46 4.3	11.776
15	3 7 47.57	2.3155	20 57 47.7	11.669
16	3 10 6.74	2.3235	21 9 24.6	11.561
17	3 12 26.39	2.3314	21 20 55.0	11.452
18	3 14 46.51	2.3394	21 32 18.8	11.340
19	3 17 7.12	2.3476	21 43 35.8	11.226
20	3 19 28.22	2.3557	21 54 45.9	11.110
21	3 21 49.80	2.3638	22 5 49.0	10.993
22	3 24 11.87	2.3719	22 16 45.1	10.874
23	3 26 34.43	2.3800	22 27 33.9	10.753
24	3 28 57.47	2.3881	N.22 38 15.4	10.630

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 28 57.47	2.3881	N.22 38 15.4	10.630
1	3 31 21.00	2.3963	22 48 49.5	10.505
2	3 33 45.03	2.4046	22 59 16.0	10.378
3	3 36 9.55	2.4128	23 9 34.9	10.251
4	3 38 34.56	2.4209	23 19 46.1	10.121
5	3 41 0.06	2.4290	23 29 49.4	9.988
6	3 43 26.04	2.4372	23 39 44.7	9.854
7	3 45 52.52	2.4454	23 49 31.9	9.718
8	3 48 19.49	2.4535	23 59 10.9	[illegible]
9	3 50 46.94	2.4616	24 8 41.7	9.443
10	3 53 14.88	2.4697	24 18 4.0	9.301
11	3 55 43.30	2.4778	24 27 17.8	9.158
12	3 58 12.21	2.4858	24 36 23.0	9.014
13	4 0 41.60	2.4938	24 45 19.5	8.867
14	4 3 11.47	2.5018	24 54 7.1	8.718
15	4 5 41.82	2.5097	25 2 45.7	8.568
16	4 8 12.64	2.5176	25 11 15.2	8.416
17	4 10 43.93	2.5255	25 19 35.6	8.262
18	4 13 15.70	2.5333	25 27 46.7	8.107
19	4 15 47.93	2.5410	25 35 48.4	7.949
20	4 18 20.62	2.5487	25 43 40.6	7.790
21	4 20 53.77	2.5563	25 51 23.2	7.629
22	4 23 27.38	2.5638	25 58 56.1	7.467
23	4 26 1.43	2.5713	N.26 6 19.2	7.303

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 28 35.93	2.5786	N.26 13 32.4	7.137
1	4 31 10.87	2.5859	26 20 35.6	6.969
2	4 33 46.24	2.5932	26 27 28.7	6.799
3	4 36 22.05	2.6003	26 34 11.5	6.627
4	4 38 58.28	2.6073	26 40 44.0	6.455
5	4 41 34.93	2.6141	26 47 6.1	6.281
6	4 44 11.98	2.6209	26 53 17.7	6.105
7	4 46 49.44	2.6277	26 59 18.7	5.927
8	4 49 27.30	2.6343	27 5 9.0	5.748
9	4 52 5.56	2.6409	27 10 48.5	5.568
10	4 54 44.21	2.6472	27 16 17.2	5.387
11	4 57 23.23	2.6534	27 21 34.9	5.203
12	5 0 2.62	2.6596	27 26 41.5	5.018
13	5 2 42.38	2.6656	27 31 37.0	4.832
14	5 5 22.49	2.6713	27 36 21.3	4.643
15	5 8 2.94	2.6770	27 40 54.2	4.453
16	5 10 43.73	2.6826	27 45 15.7	4.263
17	5 13 24.85	2.6880	27 49 25.8	4.072
18	5 16 6.29	2.6932	27 53 24.4	3.880
19	5 18 48.03	2.6982	27 57 11.4	3.686
20	5 21 30.08	2.7032	28 0 46.7	3.490
21	5 24 12.42	2.7080	28 4 10.2	3.293
22	5 26 55.04	2.7126	28 7 21.9	3.096
23	5 29 37.93	2.7170	28 10 21.7	2.897
24	5 32 21.08	2.7212	N.28 13 9.5	2.697

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 32 21.08	2.7212	N.28 13 9.5	2.697
1	5 35 4.48	2.7253	28 15 45.3	2.497
2	5 37 48.12	2.7292	28 18 9.1	2.295
3	5 40 31.99	2.7329	28 20 20.7	2.092
4	5 43 16.07	2.7364	28 22 20.1	1.888
5	5 46 0.36	2.7397	28 24 7.3	1.685
6	5 48 44.84	2.7428	28 25 42.3	1.480
7	5 51 29.50	2.7458	28 27 4.9	1.274
8	5 54 14.34	2.7486	28 28 15.1	1.068
9	5 56 59.34	2.7512	28 29 13.0	0.861
10	5 59 44.48	2.7535	28 29 58.4	0.653
11	6 2 29.76	2.7557	28 30 31.3	0.444
12	6 5 15.16	2.7576	28 30 51.7	0.236
13	6 8 0.67	2.7593	28 30 59.6	+ 0.027
14	6 10 46.28	2.7609	28 30 54.9	− 0.182
15	6 13 31.98	2.7622	28 30 37.7	0.392
16	6 16 17.75	2.7633	28 30 7.9	0.602
17	6 19 3.58	2.7642	28 29 25.4	0.813
18	6 21 49.46	2.7650	28 28 30.3	1.023
19	6 24 35.38	2.7655	28 27 22.6	1.233
20	6 27 21.32	2.7657	28 26 2.3	1.444
21	6 30 7.27	2.7658	28 24 29.3	1.655
22	6 32 53.22	2.7657	28 22 43.7	1.865
23	6 35 39.16	2.7654	N.28 20 45.5	2.075

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 38 25.07	2.7648	N.28 18 34.7	2.286
1	6 41 10.94	2.7641	28 16 11.2	2.496
2	6 43 56.76	2.7632	28 13 35.2	2.705
3	6 46 42.52	2.7620	28 10 46.6	2.915
4	6 49 28.20	2.7606	28 7 45.4	3.124
5	6 52 13.79	2.7591	28 4 31.7	3.333
6	6 54 59.29	2.7573	28 1 5.4	3.541
7	6 57 44.67	2.7553	27 57 26.7	3.749
8	7 0 29.92	2.7531	27 53 35.5	3.957
9	7 3 15.04	2.7507	27 49 31.9	4.163
10	7 6 0.01	2.7482	27 45 15.9	4.369
11	7 8 44.82	2.7455	27 40 47.6	4.574
12	7 11 29.47	2.7426	27 36 7.0	4.778
13	7 14 13.93	2.7394	27 31 14.2	4.982
14	7 16 58.20	2.7361	27 26 9.1	5.186
15	7 19 42.26	2.7326	27 20 51.9	5.388
16	7 22 26.11	2.7289	27 15 22.6	5.588
17	7 25 9.73	2.7251	27 9 41.3	5.787
18	7 27 53.12	2.7211	27 3 48.1	5.986
19	7 30 36.26	2.7169	26 57 43.0	6.184
20	7 33 19.15	2.7126	26 51 26.0	6.381
21	7 36 1.77	2.7080	26 44 57.3	6.576
22	7 38 44.11	2.7033	26 38 16.9	6.770
23	7 41 26.17	2.6986	26 31 24.9	6.963
24	7 44 7.94	2.6937	N.26 24 21.3	7.155

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 44 7.94	2.6937	N.26 24 21.3	7.155
1	7 46 49.41	2.6885	26 17 6.3	7.345
2	7 49 30.56	2.6832	26 9 39.9	7.533
3	7 52 11.39	2.6777	26 2 2.3	7.720
4	7 54 51.89	2.6722	25 54 13.5	7.906
5	7 57 32.06	2.6666	25 46 13.6	8.091
6	8 0 11.88	2.6608	25 38 2.6	8.274
7	8 2 51.35	2.6549	25 29 40.7	8.455
8	8 5 30.47	2.6489	25 21 8.0	8.633
9	8 8 9.22	2.6427	25 12 24.7	8.810
10	8 10 47.60	2.6365	25 3 30.8	8.987
11	8 13 25.60	2.6301	24 54 26.3	9.162
12	8 16 3.21	2.6236	24 45 11.3	9.335
13	8 18 40.43	2.6171	24 35 46.1	9.505
14	8 21 17.26	2.6105	24 26 10.7	9.675
15	8 23 53.69	2.6037	24 16 25.1	9.843
16	8 26 29.71	2.5969	24 6 29.6	10.008
17	8 29 5.32	2.5900	23 56 24.2	10.172
18	8 31 40.51	2.5830	23 46 9.0	10.333
19	8 34 15.28	2.5759	23 35 44.2	10.492
20	8 36 49.62	2.5688	23 25 9.9	10.650
21	8 39 23.54	2.5617	23 14 26.2	10.806
22	8 41 57.03	2.5545	23 3 33.2	10.960
23	8 44 30.08	2.5472	N.22 52 31.0	11.112

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 47 2.69	2.5398	N.22 41 19.8	11.262
1	8 49 34.86	2.5325	22 29 59.6	11.410
2	8 52 6.59	2.5251	22 18 30.6	11.555
3	8 54 37.87	2.5176	22 6 53.0	11.698
4	8 57 8.70	2.5101	21 55 6.8	11.840
5	8 59 39.08	2.5026	21 43 12.2	11.980
6	9 2 9.01	2.4950	21 31 9.2	12.118
7	9 4 38.48	2.4874	21 18 58.0	12.253
8	9 7 7.50	2.4799	21 6 38.8	12.386
9	9 9 36.07	2.4723	20 54 11.7	12.517
10	9 12 4.18	2.4647	20 41 36.8	12.646
11	9 14 31.83	2.4571	20 28 54.2	12.772
12	9 16 59.03	2.4495	20 16 4.1	12.897
13	9 19 25.77	2.4418	20 3 6.5	13.020
14	9 21 52.05	2.4342	19 50 1.7	13.140
15	9 24 17.87	2.4266	19 36 49.7	13.258
16	9 26 43.24	2.4190	19 23 30.7	13.374
17	9 29 8.15	2.4114	19 10 4.8	13.487
18	9 31 32.61	2.4038	18 56 32.2	13.599
19	9 33 56.61	2.3962	18 42 52.9	13.709
20	9 36 20.16	2.3887	18 29 7.1	13.816
21	9 38 43.26	2.3812	18 15 15.0	13.921
22	9 41 5.91	2.3737	18 1 16.6	14.024
23	9 43 28.11	2.3662	17 47 12.1	14.125
24	9 45 49.86	2.3588	N.17 33 1.6	14.223

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 45 49.86	2.3588	N.17 33 1.6	14.223
1	9 48 11.17	2.3515	17 18 45.3	14.320
2	9 50 32.04	2.3441	17 4 23.2	14.415
3	9 52 52.46	2.3368	16 49 55.5	14.507
4	9 55 12.45	2.3295	16 35 22.4	14.597
5	9 57 32.00	2.3223	16 20 43.9	14.685
6	9 59 51.12	2.3151	16 6 0.2	14.771
7	10 2 9.81	2.3079	15 51 11.4	14.854
8	10 4 28.07	2.3008	15 36 17.7	14.936
9	10 6 45.91	2.2938	15 21 19.1	15.016
10	10 9 3.33	2.2868	15 6 15.8	15.093
11	10 11 20.33	2.2799	14 51 8.0	15.168
12	10 13 36.92	2.2731	14 35 55.7	15.241
13	10 15 53.10	2.2662	14 20 39.1	15.312
14	10 18 8.87	2.2594	14 5 18.3	15.381
15	10 20 24.23	2.2527	13 49 53.4	15.448
16	10 22 39.19	2.2461	13 34 24.5	15.513
17	10 24 53.76	2.2396	13 18 51.8	15.576
18	10 27 7.94	2.2331	13 3 15.4	15.637
19	10 29 21.73	2.2267	12 47 35.4	15.696
20	10 31 35.14	2.2203	12 31 51.9	15.753
21	10 33 48.16	2.2139	12 16 5.1	15.808
22	10 36 0.81	2.2078	12 0 15.0	15.861
23	10 38 13.09	2.2017	N.11 44 21.8	15.912

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 40 25.01	2.1956	N.11 28 25.6	15.961
1	10 42 36.56	2.1896	11 12 26.5	16.008
2	10 44 47.76	2.1837	10 56 24.7	16.053
3	10 46 58.60	2.1778	10 40 20.2	16.096
4	10 49 9.09	2.1720	10 24 13.2	16.137
5	10 51 19.24	2.1663	10 8 3.7	16.177
6	10 53 29.05	2.1607	9 51 51.9	16.215
7	10 55 38.52	2.1552	9 35 37.9	16.251
8	10 57 47.67	2.1497	9 19 21.8	16.284
9	10 59 56.49	2.1443	9 3 3.8	16.316
10	11 2 4.99	2.1391	8 46 43.9	16.347
11	11 4 13.18	2.1339	8 30 22.2	16.376
12	11 6 21.06	2.1288	8 13 58.8	16.402
13	11 8 28.64	2.1237	7 57 33.9	16.427
14	11 10 35.91	2.1187	7 41 7.6	16.450
15	11 12 42.88	2.1138	7 24 39.9	16.472
16	11 14 49.56	2.1090	7 8 11.0	16.491
17	11 16 55.96	2.1043	6 51 41.0	16.509
18	11 19 2.08	2.0997	6 35 9.9	16.526
19	11 21 7.92	2.0952	6 18 37.9	16.540
20	11 23 13.50	2.0907	6 2 5.1	16.553
21	11 25 18.81	2.0863	5 45 31.5	16.565
22	11 27 23.86	2.0821	5 28 57.3	16.574
23	11 29 28.66	2.0779	5 12 22.6	16.582
24	11 31 33.21	2.0737	N. 4 55 47.5	16.588

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 31 33.21	2.0737	N. 4 55 47.5	16.588
1	11 33 37.51	2.0697	4 39 12.0	16.593
2	11 35 41.58	2.0658	4 22 36.3	16.597
3	11 37 45.41	2.0619	4 6 0.4	16.599
4	11 39 49.01	2.0582	3 49 24.4	16.599
5	11 41 52.39	2.0545	3 32 48.5	16.597
6	11 43 55.55	2.0509	3 16 12.7	16.595
7	11 45 58.50	2.0474	2 59 37.1	16.591
8	11 48 1.24	2.0439	2 43 1.8	16.585
9	11 50 3.77	2.0406	2 26 26.9	16.577
10	11 52 6.11	2.0374	2 9 52.5	16.568
11	11 54 8.26	2.0342	1 53 18.7	16.558
12	11 56 10.22	2.0312	1 36 45.5	16.547
13	11 58 12.00	2.0282	1 20 13.0	16.534
14	12 0 13.60	2.0253	1 3 41.4	16.519
15	12 2 15.03	2.0225	0 47 10.7	16.504
16	12 4 16.30	2.0197	0 30 40.9	16.487
17	12 6 17.40	2.0170	N. 0 14 12.3	16.467
18	12 8 18.34	2.0144	S. 0 2 15.1	16.447
19	12 10 19.13	2.0120	0 18 41.3	16.427
20	12 12 19.78	2.0096	0 35 6.3	16.405
21	12 14 20.29	2.0073	0 51 29.9	16.381
22	12 16 20.66	2.0051	1 7 52.0	16.355
23	12 18 20.90	2.0029	S. 1 24 12.5	16.328

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 20 21.01	2.0008	S. 1 40 31.4	16.301
1	12 22 21.00	1.9988	1 56 48.7	16.272
2	12 24 20.87	1.9969	2 13 4.1	16.241
3	12 26 20.63	1.9951	2 29 17.6	16.209
4	12 28 20.28	1.9934	2 45 29.2	16.177
5	12 30 19.84	1.9918	3 1 38.9	16.144
6	12 32 19.30	1.9902	3 17 46.5	16.109
7	12 34 18.67	1.9887	3 33 52.0	16.072
8	12 36 17.95	1.9873	3 49 55.2	16.034
9	12 38 17.14	1.9859	4 5 56.1	15.996
10	12 40 16.26	1.9846	4 21 54.7	15.956
11	12 42 15.30	1.9834	4 37 50.8	15.914
12	12 44 14.27	1.9823	4 53 44.4	15.872
13	12 46 13.18	1.9813	5 9 35.4	15.829
14	12 48 12.03	1.9804	5 25 23.9	15.786
15	12 50 10.83	1.9796	5 41 9.7	15.741
16	12 52 9.58	1.9788	5 56 52.8	15.694
17	12 54 8.29	1.9781	6 12 33.0	15.646
18	12 56 6.95	1.9774	6 28 10.3	15.597
19	12 58 5.57	1.9768	6 43 44.6	15.547
20	13 0 4.17	1.9764	6 59 16.0	15.497
21	13 2 2.74	1.9760	7 14 44.3	15.445
22	13 4 1.29	1.9756	7 30 9.4	15.392
23	13 5 59.82	1.9753	7 45 31.4	15.339
24	13 7 58.33	1.9752	S. 8 0 50.1	15.284

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 7 58.33	1.9752	S. 8 0 50.1	15.284
1	13 9 56.84	1.9751	8 16 5.5	15.228
2	13 11 55.34	1.9750	8 31 17.5	15.171
3	13 13 53.84	1.9750	8 46 26.0	15.113
4	13 15 52.34	1.9751	9 1 31.0	15.054
5	13 17 50.85	1.9752	9 16 32.5	14.995
6	13 19 49.37	1.9755	9 31 30.4	14.934
7	13 21 47.91	1.9758	9 46 24.6	14.872
8	13 23 46.47	1.9762	10 1 15.1	14.809
9	13 25 45.05	1.9766	10 16 1.7	14.745
10	13 27 43.66	1.9772	10 30 44.5	14.681
11	13 29 42.31	1.9777	10 45 23.4	14.616
12	13 31 40.99	1.9783	10 59 58.4	14.550
13	13 33 39.71	1.9791	11 14 29.4	14.482
14	13 35 38.48	1.9798	11 28 56.3	14.413
15	13 37 37.29	1.9806	11 43 19.0	14.344
16	13 39 36.15	1.9815	11 57 37.6	14.275
17	13 41 35.07	1.9824	12 11 52.0	14.204
18	13 43 34.04	1.9834	12 26 2.1	14.132
19	13 45 33.08	1.9845	12 40 7.9	14.060
20	13 47 32.18	1.9856	12 54 9.3	13.987
21	13 49 31.35	1.9868	13 8 6.3	13.912
22	13 51 30.60	1.9881	13 21 58.8	13.837
23	13 53 29.92	1.9894	S. 13 35 46.8	13.761

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 55 29.32	1.9908	S. 13 49 30.1	13.684
1	13 57 28.81	1.9922	14 3 8.8	13.607
2	13 59 28.38	1.9936	14 16 42.9	13.528
3	14 1 28.04	1.9952	14 30 12.2	13.448
4	14 3 27.80	1.9967	14 43 36.7	13.368
5	14 5 27.65	1.9983	14 56 56.4	13.287
6	14 7 27.60	2.0000	15 10 11.2	13.206
7	14 9 27.65	2.0018	15 23 21.1	13.123
8	14 11 27.81	2.0036	15 36 26.0	13.040
9	14 13 28.08	2.0054	15 49 25.9	12.956
10	14 15 28.46	2.0073	16 2 20.7	12.871
11	14 17 28.95	2.0092	16 15 10.4	12.785
12	14 19 29.56	2.0112	16 27 54.9	12.698
13	14 21 30.29	2.0132	16 40 34.2	12.611
14	14 23 31.14	2.0153	16 53 8.2	12.523
15	14 25 32.12	2.0174	17 5 37.0	12.435
16	14 27 33.23	2.0196	17 18 0.4	12.345
17	14 29 34.47	2.0218	17 30 18.4	12.254
18	14 31 35.84	2.0240	17 42 30.9	12.163
19	14 33 37.35	2.0263	17 54 37.9	12.071
20	14 35 39.00	2.0286	18 6 39.4	11.979
21	14 37 40.78	2.0309	18 18 35.4	11.886
22	14 39 42.71	2.0333	18 30 25.7	11.791
23	14 41 44.78	2.0357	18 42 10.3	11.697
24	14 43 47.00	2.0382	S. 18 53 49.3	11.602

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 43 47.00	2.0382	S. 18 53 49.3	11.602
1	14 45 49.37	2.0407	19 5 22.5	11.505
2	14 47 51.89	2.0432	19 16 49.9	11.408
3	14 49 54.56	2.0458	19 28 11.4	11.310
4	14 51 57.39	2.0484	19 39 27.1	11.212
5	14 54 0.37	2.0510	19 50 36.8	11.114
6	14 56 3.51	2.0537	20 1 40.6	11.013
7	14 58 6.81	2.0563	20 12 38.4	10.912
8	15 0 10.27	2.0590	20 23 30.1	10.811
9	15 2 13.89	2.0617	20 34 15.7	10.709
10	15 4 17.67	2.0644	20 44 55.2	10.607
11	15 6 21.62	2.0672	20 55 28.5	10.503
12	15 8 25.74	2.0701	21 5 55.6	10.399
13	15 10 30.03	2.0729	21 16 16.4	10.294
14	15 12 34.48	2.0756	21 26 30.9	10.189
15	15 14 39.10	2.0784	21 36 39.1	10.083
16	15 16 43.89	2.0813	21 46 40.9	9.977
17	15 18 48.86	2.0842	21 56 36.3	9.869
18	15 20 54.00	2.0871	22 6 25.2	9.761
19	15 22 59.31	2.0900	22 16 7.6	9.652
20	15 25 4.80	2.0929	22 25 43.5	9.543
21	15 27 10.46	2.0958	22 35 12.8	9.433
22	15 29 16.30	2.0987	22 44 35.5	9.322
23	15 31 22.31	2.1017	S. 22 53 51.5	9.211

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 33 28.50	2.1047	S. 23 3 0.8	9.099
1	15 35 34.87	2.1076	23 12 3.4	8.987
2	15 37 41.41	2.1105	23 20 59.2	8.873
3	15 39 48.13	2.1134	23 29 48.2	8.760
4	15 41 55.02	2.1163	23 38 30.4	8.646
5	15 44 2.09	2.1193	23 47 5.7	8.531
6	15 46 9.34	2.1222	23 55 34.1	8.416
7	15 48 16.76	2.1252	24 3 55.6	8.299
8	15 50 24.36	2.1281	24 12 10.0	8.182
9	15 52 32.13	2.1310	24 20 17.4	8.065
10	15 54 40.08	2.1339	24 28 17.8	7.947
11	15 56 48.20	2.1368	24 36 11.1	7.828
12	15 58 56.50	2.1397	24 43 57.2	7.709
13	16 1 4.97	2.1426	24 51 36.2	7.590
14	16 3 13.61	2.1454	24 59 8.0	7.469
15	16 5 22.42	2.1482	25 6 32.5	7.348
16	16 7 31.40	2.1511	25 13 49.8	7.227
17	16 9 40.55	2.1539	25 20 59.8	7.105
18	16 11 49.87	2.1567	25 28 2.4	6.983
19	16 13 59.36	2.1595	25 34 57.7	6.860
20	16 16 9.01	2.1622	25 41 45.6	6.736
21	16 18 18.82	2.1649	25 48 26.0	6.612
22	16 20 28.80	2.1676	25 54 59.0	6.488
23	16 22 38.94	2.1702	26 1 24.5	6.363
24	16 24 49.23	2.1728	S. 26 7 42.6	6.238

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 24 49.23	2.1728	S. 26 7 42.6	6.238
1	16 26 59.68	2.1755	26 13 53.1	6.112
2	16 29 10.29	2.1781	26 19 56.0	5.984
3	16 31 21.05	2.1806	26 25 51.2	5.857
4	16 33 31.96	2.1831	26 31 38.8	5.730
5	16 35 43.02	2.1856	26 37 18.8	5.603
6	16 37 54.23	2.1880	26 42 51.2	5.475
7	16 40 5.58	2.1905	26 48 15.8	5.345
8	16 42 17.07	2.1928	26 53 32.6	5.216
9	16 44 28.71	2.1951	26 58 41.7	5.087
10	16 46 40.48	2.1974	27 3 43.0	4.957
11	16 48 52.39	2.1996	27 8 36.5	4.827
12	16 51 4.43	2.2017	27 13 22.2	4.696
13	16 53 16.60	2.2038	27 18 0.0	4.564
14	16 55 28.89	2.2059	27 22 29.9	4.432
15	16 57 41.31	2.2080	27 26 51.9	4.300
16	16 59 53.85	2.2100	27 31 5.9	4.168
17	17 2 6.51	2.2119	27 35 12.0	4.035
18	17 4 19.28	2.2138	27 39 10.1	3.902
19	17 6 32.16	2.2156	27 43 0.2	3.768
20	17 8 45.15	2.2174	27 46 42.3	3.634
21	17 10 58.25	2.2191	27 50 16.3	3.500
22	17 13 11.44	2.2207	27 53 42.3	3.366
23	17 15 24.73	2.2223	S. 27 57 0.2	3.232

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 17 38.12	2.2239	S. 28 0 10.1	3.097
1	17 19 51.60	2.2253	28 3 11.8	2.961
2	17 22 5.16	2.2267	28 6 5.4	2.826
3	17 24 18.81	2.2281	28 8 50.9	2.690
4	17 26 32.54	2.2295	28 11 28.2	2.554
5	17 28 46.35	2.2307	28 13 57.4	2.418
6	17 31 0.23	2.2319	28 16 18.4	2.282
7	17 33 14.18	2.2330	28 18 31.2	2.145
8	17 35 28.19	2.2341	28 20 35.8	2.008
9	17 37 42.27	2.2351	28 22 32.2	1.871
10	17 39 56.40	2.2359	28 24 20.3	1.734
11	17 42 10.58	2.2368	28 26 0.2	1.597
12	17 44 24.82	2.2377	28 27 31.9	1.459
13	17 46 39.10	2.2383	28 28 55.3	1.322
14	17 48 53.42	2.2389	28 30 10.5	1.184
15	17 51 7.77	2.2395	28 31 17.4	1.046
16	17 53 22.16	2.2400	28 32 16.0	0.908
17	17 55 36.57	2.2404	28 33 6.3	0.770
18	17 57 51.01	2.2408	28 33 48.4	0.632
19	18 0 5.47	2.2411	28 34 22.2	0.494
20	18 2 19.94	2.2413	28 34 47.7	0.356
21	18 4 34.42	2.2414	28 35 4.9	0.217
22	18 6 48.91	2.2415	28 35 13.8	− 0.079
23	18 9 3.40	2.2415	28 35 14.4	+ 0.059
24	18 11 17.89	2.2415	S. 28 35 6.7	0.197

GREENWICH MEAN TIME.

PHASES OF THE MOON.

		d	h	m
● New Moon	Feb.	5	9	45.4
☽ First Quarter		12	22	42.8
○ Full Moon		19	14	16.6
☾ Last Quarter		27	0	28.2

		d	h
☾ Apogee	Feb.	1	10.0
☾ Perigee		17	9.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Spica	W.	61° 50′ 46″	3087	63° 19′ 12″	3086	64° 47′ 39″	3085	66° 16′ 7″	3083
	SATURN	W.	59 31 20	3097	60 59 33	3097	62 27 46	3096	63 56 1	3094
	SUN	E.	48 34 4	3498	47 13 38	3498	45 53 12	3498	44 32 46	3498
2	Spica	W.	73 38 57	3073	75 7 39	3070	76 36 25	3068	78 5 14	3064
	SATURN	W.	71 17 51	3082	72 46 22	3079	74 14 57	3076	75 43 36	3072
	Antares	W.	27 45 0	3073	29 13 43	3070	30 42 29	3067	32 11 19	3063
	SUN	E.	37 50 30	3495	36 30 0	3493	35 9 28	3492	33 48 55	3491
3	Spica	W.	85 30 32	3043	86 59 51	3038	88 29 17	3033	89 58 49	3028
	SATURN	W.	83 8 5	3051	84 37 15	3046	86 6 31	3040	87 35 54	3035
	Antares	W.	39 36 42	3043	41 6 3	3038	42 35 29	3033	44 5 1	3027
	MARS	W.	25 33 21	3377	26 56 4	3366	28 18 59	3355	29 42 7	3345
	SUN	E.	27 5 52	3488	25 45 14	3488	24 24 36	3489	23 4 0	3493
7	SUN	W.	18 19 8	3300	19 43 20	3278	21 7 57	3258	22 32 58	3239
	α Arietis	E.	60 27 54	2679	58 55 8	2673	57 22 15	2667	55 49 14	2662
	JUPITER	E.	75 26 33	2864	73 53 28	2856	72 20 13	2848	70 46 48	2841
	Aldebaran	E.	91 10 48	2888	89 38 14	2880	88 5 30	2873	86 32 36	2865
8	SUN	W.	29 42 59	3165	31 9 50	3153	32 36 56	3140	34 4 17	3128
	α Arietis	E.	48 2 23	2635	46 28 41	2631	44 54 54	2627	43 21 1	2624
	JUPITER	E.	62 57 13	2802	61 22 48	2794	59 48 12	2786	58 13 26	2778
	Aldebaran	E.	78 45 36	2826	77 11 42	2819	75 37 39	2811	74 3 26	2804
	Pollux	E.	122 20 0	2763	120 44 44	2754	119 9 16	2746	117 33 37	2737
9	SUN	W.	41 24 36	3071	42 53 21	3060	44 22 20	3049	45 51 32	3038
	α Arietis	E.	35 30 48	2618	33 56 43	2620	32 22 41	2624	30 48 44	2630
	JUPITER	E.	50 17 1	2739	48 41 13	2732	47 5 15	2724	45 29 7	2716
	Aldebaran	E.	66 9 59	2769	64 34 50	2762	62 59 32	2755	61 24 5	2749
	Pollux	E.	109 32 29	2694	107 55 41	2684	106 18 40	2676	104 41 28	2666
10	SUN	W.	53 20 57	2983	54 51 31	2973	56 22 18	2961	57 53 20	2950
	JUPITER	E.	37 25 54	2679	35 48 46	2672	34 11 29	2666	32 34 3	2660
	Aldebaran	E.	53 24 49	2720	51 48 36	2716	50 12 17	2711	48 35 52	2707
	Pollux	E.	96 32 21	2621	94 53 54	2611	93 15 14	2601	91 36 21	2591
11	SUN	W.	65 31 58	2894	67 4 25	2883	68 37 6	2871	70 10 2	2859
	α Pegasi	W.	39 47 0	3332	41 10 34	3270	42 35 20	3214	44 1 12	3163
	Aldebaran	E.	40 32 46	2699	38 56 5	2701	37 19 26	2704	35 42 51	2710
	Pollux	E.	83 18 32	2542	81 38 17	2532	79 57 48	2521	78 17 4	2511
	Regulus	E.	120 0 56	2548	118 20 50	2538	116 40 29	2527	114 59 53	2517
12	SUN	W.	77 58 27	2801	79 32 54	2789	81 7 36	2777	82 42 34	2766
	α Pegasi	W.	51 24 35	2958	52 55 40	2926	54 27 26	2895	55 59 51	2866
	Pollux	E.	69 49 47	2458	68 7 35	2447	66 25 7	2436	64 42 24	2426
	Regulus	E.	106 33 13	2463	104 51 8	2452	103 8 47	2441	101 26 10	2430
13	SUN	W.	90 41 19	2705	92 17 52	2694	93 54 40	2682	95 31 44	2670
	α Pegasi	W.	63 50 44	2742	65 26 28	2721	67 2 40	2701	68 39 19	2681
	Pollux	E.	56 4 59	2372	54 20 44	2361	52 36 13	2350	50 51 26	2339
	Regulus	E.	92 49 13	2375	91 5 2	2364	89 20 36	2353	87 35 54	2343

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Spica	W.	67° 44′ 37″	3062	69° 13′ 8″	3082	70° 41′ 42″	3078	72° 10′ 18″	3076
	Saturn	W.	65 24 18	3092	66 52 37	3090	68 20 59	3068	69 49 23	3085
	Sun	E.	43 12 20	3496	41 51 54	3497	40 31 27	3497	39 10 59	3496
2	Spica	W.	79 34 8	3060	81 3 7	3056	82 32 10	3052	84 1 18	3047
	Saturn	W.	77 12 20	3068	78 41 9	3065	80 10 2	3060	81 39 1	3056
	Antares	W.	33 40 14	3059	35 9 14	3056	36 38 18	3052	38 7 27	3047
	Sun	E.	32 28 21	3489	31 7 45	3486	29 47 8	3488	28 26 30	3488
3	Spica	W.	91 28 27	3022	92 58 12	3017	94 28 4	3011	95 58 3	3005
	Saturn	W.	89 5 23	3030	90 34 59	3024	92 4 42	3018	93 34 32	3013
	Antares	W.	45 34 40	3022	47 4 25	3016	48 34 18	3010	50 4 18	3005
	Mars	W.	31 5 27	3334	32 28 59	3325	33 52 42	3314	35 16 37	3306
	Sun	E.	21 43 28	3497	20 23 1	3503	19 2 40	3511	17 42 28	3523
7	Sun	W.	23 58 21	3222	25 24 4	3207	26 50 5	3192	28 16 24	3178
	α Arietis	E.	54 16 6	2856	52 42 51	2850	51 9 28	2845	49 35 59	2840
	Jupiter	E.	69 13 13	2833	67 39 28	2825	66 5 33	2818	64 31 28	2810
	Aldebaran	E.	84 59 32	2857	83 26 18	2849	81 52 54	2842	80 19 20	2834
8	Sun	W.	35 31 53	3116	36 59 43	3105	38 27 47	3093	39 56 5	3082
	α Arietis	E.	41 47 4	2821	40 13 3	2819	38 39 0	2817	37 4 54	2817
	Jupiter	E.	56 38 29	2771	55 3 23	2763	53 28 6	2755	51 52 39	2747
	Aldebaran	E.	72 29 3	2797	70 54 31	2790	69 19 50	2782	67 44 59	2775
	Pollux	E.	115 57 46	2729	114 21 44	2720	112 45 31	2711	111 9 6	2702
9	Sun	W.	47 20 58	3027	48 50 37	3016	50 20 30	3005	51 50 37	2994
	α Arietis	E.	29 14 55	2838	27 41 17	2849	26 7 53	2865	24 34 49	2887
	Jupiter	E.	43 52 48	2709	42 16 20	2701	40 39 41	2693	39 2 52	2687
	Aldebaran	E.	59 48 30	2743	58 12 47	2736	56 36 55	2731	55 0 56	2725
	Pollux	E.	103 4 3	2657	101 26 26	2649	99 48 37	2639	98 10 35	2630
10	Sun	W.	59 24 35	2939	60 56 4	2927	62 27 48	2916	63 59 46	2905
	Jupiter	E.	30 56 30	2655	29 18 49	2650	27 41 2	2646	26 3 9	2643
	Aldebaran	E.	46 59 21	2704	45 22 46	2701	43 46 8	2699	42 9 27	2699
	Pollux	E.	89 57 14	2582	88 17 54	2572	86 38 20	2562	84 58 33	2552
11	Sun	W.	71 43 13	2848	73 16 39	2836	74 50 20	2825	76 24 16	2813
	α Pegasi	W.	45 28 6	3115	46 55 57	3072	48 24 41	3031	49 54 15	2994
	Aldebaran	E.	34 6 24	2717	32 30 7	2728	30 54 4	2743	29 18 21	2762
	Pollux	E.	76 36 6	2500	74 54 53	2490	73 13 26	2480	71 31 44	2469
	Regulus	E.	113 19 3	2506	111 37 58	2495	109 56 38	2485	108 15 3	2474
12	Sun	W.	84 17 47	2753	85 53 16	2741	87 29 1	2729	89 5 2	2717
	α Pegasi	W.	57 32 54	2838	59 6 33	2812	60 40 45	2788	62 15 29	2764
	Pollux	E.	62 59 26	2415	61 16 12	2404	59 32 43	2394	57 48 59	2382
	Regulus	E.	99 43 18	2419	98 0 10	2408	96 16 47	2397	94 33 8	2386
13	Sun	W.	97 9 4	2659	98 46 39	2647	100 24 30	2635	102 2 37	2624
	α Pegasi	W.	70 16 24	2663	71 53 53	2646	73 31 46	2629	75 10 1	2613
	Pollux	E.	49 6 24	2329	47 21 7	2318	45 35 34	2308	43 49 46	2297
	Regulus	E.	85 50 57	2332	84 5 44	2321	82 20 15	2311	80 34 31	2300

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
14	Sun	W.	103° 40′ 59″	2612	105° 19′ 37″	2602	106° 58′ 29″	2591	108° 37′ 36″	2580
	α Pegasi	W.	76 48 38	2598	78 27 36	2584	80 6 53	2570	81 46 29	2558
	α Arietis	W.	33 33 26	2411	35 16 45	2390	37 0 34	2371	38 44 51	2353
	Pollux	E.	42 3 42	2287	40 17 24	2277	38 30 51	2268	36 44 4	2258
	Regulus	E.	78 48 32	2290	77 2 18	2279	75 15 48	2269	73 29 3	2260
15	Sun	W.	116 56 47	2530	118 37 18	2522	120 18 1	2512	121 58 57	2504
	α Pegasi	W.	90 8 31	2505	91 49 37	2497	93 30 54	2589	95 12 22	2484
	α Arietis	W.	47 32 17	2278	49 18 49	2265	51 5 40	2253	52 52 48	2243
	Jupiter	W.	31 21 52	2277	33 8 26	2264	34 55 18	2253	36 42 27	2242
	Regulus	E.	64 31 47	2213	62 43 39	2205	60 55 19	2197	59 6 47	2189
	Spica	E.	118 32 31	2206	116 44 13	2198	114 55 43	2190	113 7 0	2181
	Saturn	E.	120 42 10	2212	118 54 0	2203	117 5 37	2194	115 17 0	2186
16	Sun	W.	130 26 19	2468	132 8 17	2463	133 50 22	2458	135 32 34	2453
	α Arietis	W.	61 52 16	2196	63 40 49	2188	65 29 34	2182	67 18 29	2175
	Jupiter	W.	45 41 53	2198	47 30 24	2191	49 19 5	2184	51 7 56	2178
	Aldebaran	W.	31 56 32	2371	33 40 48	2344	35 25 43	2321	37 11 12	2300
	Regulus	E.	50 1 22	2157	48 11 49	2151	46 22 7	2146	44 32 18	2142
	Spica	E.	104 0 31	2146	102 10 42	2141	100 20 45	2135	98 30 39	2130
	Saturn	E.	106 10 57	2149	104 21 12	2143	102 31 18	2137	100 41 15	2132
17	α Arietis	W.	76 25 8	2153	78 14 46	2151	80 4 28	2149	81 54 13	2147
	Jupiter	W.	60 14 8	2157	62 3 40	2155	63 53 15	2153	65 42 53	2152
	Aldebaran	W.	46 4 53	2233	47 52 32	2223	49 40 25	2216	51 28 29	2210
	Spica	E.	89 18 29	2112	87 27 48	2110	85 37 4	2109	83 46 18	2108
	Saturn	E.	91 29 19	2113	89 38 40	2112	87 47 59	2111	85 57 16	2109
18	α Arietis	W.	91 3 7	2151	92 52 49	2154	94 42 26	2157	96 31 58	2161
	Jupiter	W.	74 51 11	2155	76 40 46	2158	78 30 17	2161	80 19 43	2165
	Aldebaran	W.	60 30 36	2194	62 19 12	2194	64 7 48	2195	65 56 23	2196
	Spica	E.	74 32 26	2112	72 41 45	2115	70 51 8	2118	69 0 36	2122
	Saturn	E.	76 43 35	2114	74 52 57	2116	73 2 23	2120	71 11 54	2124
	Antares	E.	120 26 3	2111	118 35 21	2114	116 44 43	2117	114 54 10	2121
19	α Arietis	W.	105 37 46	2192	107 26 26	2200	109 14 53	2209	111 3 7	2218
	Jupiter	W.	89 25 8	2194	91 13 45	2201	93 2 11	2209	94 50 25	2218
	Aldebaran	W.	74 58 18	2216	76 46 21	2223	78 34 14	2231	80 21 56	2238
	Pollux	W.	31 1 43	2155	32 51 19	2162	34 40 44	2169	36 29 58	2177
	Spica	E.	59 49 42	2149	57 59 58	2157	56 10 26	2165	54 21 6	2174
	Saturn	E.	62 1 19	2153	60 11 41	2161	58 22 15	2170	56 33 2	2178
	Antares	E.	105 43 10	2149	103 53 25	2157	102 3 52	2165	100 14 31	2172
20	Jupiter	W.	103 48 2	2270	105 34 45	2283	107 21 10	2295	109 7 17	2309
	Aldebaran	W.	89 17 13	2287	91 3 31	2300	92 49 31	2312	94 35 13	2325
	Pollux	W.	45 32 47	2227	47 20 35	2239	49 8 5	2250	50 55 18	2263
	Spica	E.	45 17 56	2225	43 30 6	2237	41 42 33	2249	39 55 18	2262
	Saturn	E.	47 30 38	2233	45 43 0	2246	43 55 41	2260	42 8 42	2274
	Antares	E.	91 11 12	2223	89 23 19	2235	87 35 44	2247	85 48 27	2260
21	Aldebaran	W.	103 18 45	2398	105 2 23	2414	106 45 38	2431	108 28 29	2448
	Pollux	W.	59 46 33	2332	61 31 46	2346	63 16 38	2362	65 1 8	2378

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Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	**Sun**	W.	110° 16′ 58″	2570	111° 56′ 34″	2559	113° 36′ 25″	2550	115° 16′ 29″	2540
	α Pegasi	W.	83 26 22	2545	85 6 32	2535	86 46 57	2524	88 27 37	2514
	α Arietis	W.	40 29 34	2336	42 14 41	2320	44 0 12	2305	45 46 4	2291
	Pollux	E.	34 57 2	2249	33 9 47	2239	31 22 18	2231	29 34 36	2223
	Regulus	E.	71 42 4	2249	69 54 50	2241	68 7 23	2231	66 19 42	2222
15	**Sun**	W.	123 40 4	2497	125 21 22	2489	127 2 51	2482	128 44 30	2475
	α Pegasi	W.	96 53 58	2478	98 35 42	2474	100 17 32	2470	101 59 27	2467
	α Arietis	W.	54 40 12	2232	56 27 52	2223	58 15 46	2213	60 3 54	2204
	Jupiter	W.	38 29 52	2232	40 17 32	2223	42 5 26	2214	43 53 33	2205
	Regulus	E.	57 18 3	2182	55 29 8	2174	53 40 2	2169	51 50 47	2162
	Spica	E.	111 18 4	2174	109 28 57	2167	107 39 39	2159	105 50 10	2153
	Saturn	E.	113 28 11	2177	111 39 9	2170	109 49 56	2163	108 0 32	2155
16	**Sun**	W.	137 14 53	2449	138 57 18	2446	140 39 47	2443	142 22 20	2442
	α Arietis	W.	69 7 34	2170	70 56 47	2165	72 46 8	2161	74 35 35	2157
	Jupiter	W.	52 56 56	2173	54 46 4	2169	56 35 19	2164	58 24 41	2161
	Aldebaran	W.	38 57 11	2263	40 43 35	2258	42 30 22	2254	44 17 29	2243
	Regulus	E.	42 42 23	2138	40 52 22	2136	39 2 17	2133	37 12 8	2131
	Spica	E.	96 40 25	2126	94 50 5	2121	92 59 38	2118	91 9 6	2115
	Saturn	E.	98 51 5	2127	97 0 47	2123	95 10 23	2119	93 19 53	2116
17	α Arietis	W.	83 44 0	2147	85 33 48	2147	87 23 36	2147	89 13 23	2149
	Jupiter	W.	67 32 33	2151	69 22 14	2152	71 11 54	2153	73 1 33	2153
	Aldebaran	W.	53 16 42	2204	55 5 3	2200	56 53 30	2198	58 42 1	2195
	Spica	E.	81 55 31	2107	80 4 43	2108	78 13 56	2109	76 23 10	2110
	Saturn	E.	84 6 31	2109	82 15 45	2109	80 25 0	2110	78 34 16	2112
18	α Arietis	W.	98 21 24	2166	100 10 43	2172	101 59 53	2178	103 48 54	2184
	Jupiter	W.	82 9 3	2169	83 58 17	2174	85 47 23	2180	87 36 20	2186
	Aldebaran	W.	67 44 56	2199	69 33 25	2202	71 21 49	2206	73 10 7	2211
	Spica	E.	67 10 10	2126	65 19 51	2131	63 29 39	2137	61 39 36	2143
	Saturn	E.	69 21 31	2128	67 31 15	2134	65 41 7	2139	63 51 8	2146
	Antares	E.	113 3 43	2125	111 13 22	2130	109 23 9	2136	107 33 5	2142
19	α Arietis	W.	112 51 7	2229	114 38 51	2240	116 26 19	2251	118 13 30	2264
	Jupiter	W.	96 38 26	2227	98 26 13	2237	100 13 45	2247	102 1 2	2259
	Aldebaran	W.	82 9 27	2247	83 56 45	2256	85 43 49	2266	87 30 39	2277
	Pollux	W.	38 19 0	2186	40 7 49	2196	41 56 23	2205	43 44 43	2216
	Spica	E.	52 31 59	2183	50 43 6	2192	48 54 27	2202	47 6 3	2214
	Saturn	E.	54 44 2	2188	52 55 17	2198	51 6 47	2210	49 18 34	2221
	Antares	E.	98 25 22	2182	96 36 27	2192	94 47 47	2202	92 59 22	2212
20	**Jupiter**	W.	110 53 4	2322	112 38 31	2336	114 23 38	2350	116 8 24	2366
	Aldebaran	W.	96 20 36	2338	98 5 40	2353	99 50 23	2367	101 34 45	2382
	Pollux	W.	52 42 12	2276	54 28 47	2289	56 15 3	2303	58 0 58	2317
	Spica	E.	38 8 22	2274	36 21 45	2289	34 35 29	2302	32 49 33	2317
	Saturn	E.	40 22 4	2289	38 35 48	2304	36 49 54	2320	35 4 24	2337
	Antares	E.	84 1 29	2273	82 14 50	2287	80 28 31	2300	78 42 32	2315
21	Aldebaran	W.	110 10 56	2465	111 52 58	2483	113 34 35	2502	115 15 46	2520
	Pollux	W.	66 45 15	2394	68 28 59	2409	70 12 21	2426	71 55 19	2442

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21	Regulus	W.	23° 11′ 18″	2366	24° 55′ 42″	2377	26° 39′ 50″	2388	28° 23′ 42″	2401
	SATURN	E.	33 19 19	2355	31 34 40	2373	29 50 27	2393	28 6 42	2414
	Antares	E.	76 56 54	2330	75 11 38	2344	73 26 43	2359	71 42 10	2375
	MARS	E.	103 55 21	2568	102 15 42	2583	100 36 24	2599	98 57 28	2616
22	Pollux	W.	73 37 54	2459	75 20 5	2475	77 1 53	2493	78 43 16	2510
	Regulus	W.	36 58 11	2473	38 40 2	2489	40 21 31	2505	42 2 37	2521
	Antares	E.	63 5 11	2458	61 22 58	2474	59 41 8	2491	57 59 42	2508
	MARS	E.	90 48 30	2701	89 11 52	2719	87 35 38	2738	85 59 48	2755
	α Aquilæ	E.	111 19 14	3426	109 57 27	3423	108 35 37	3422	107 13 45	3422
23	Pollux	W.	87 4 16	2596	88 43 16	2613	90 21 53	2630	92 0 7	2648
	Regulus	W.	50 22 26	2604	52 1 15	2621	53 39 41	2638	55 17 44	2655
	Antares	E.	49 38 31	2594	47 59 28	2612	46 20 49	2629	44 42 33	2646
	MARS	E.	78 6 36	2848	76 33 10	2866	75 0 7	2884	73 27 28	2902
	α Aquilæ	E.	100 25 7	3448	99 3 45	3457	97 42 33	3468	96 21 33	3480
	SUN	E.	136 9 53	2952	134 38 40	2969	133 7 49	2987	131 37 20	3005
24	Pollux	W.	100 5 31	2732	101 41 29	2747	103 17 6	2764	104 52 21	2779
	Regulus	W.	63 22 24	2738	64 58 14	2753	66 33 43	2769	68 8 52	2785
	Antares	E.	36 36 59	2730	35 0 59	2746	33 25 20	2762	31 50 2	2778
	MARS	E.	65 50 0	2993	64 19 38	3010	62 49 38	3028	61 20 0	3045
	α Aquilæ	E.	89 40 13	3554	88 20 48	3572	87 1 43	3590	85 42 58	3610
	SUN	E.	124 10 29	3094	122 42 12	3110	121 14 15	3128	119 46 39	3144
25	Regulus	W.	75 59 37	2859	77 32 49	2872	79 5 44	2886	80 38 21	2899
	Spica	W.	21 56 29	2856	23 29 44	2869	25 2 42	2883	26 35 23	2896
	MARS	E.	53 57 1	3128	52 29 25	3143	51 2 7	3158	49 35 8	3173
	α Aquilæ	E.	79 14 40	3717	77 58 11	3742	76 42 8	3767	75 26 31	3792
	VENUS	E.	98 35 9	2798	97 0 38	2811	95 26 25	2825	93 52 30	2839
	SUN	E.	112 33 33	3224	111 7 52	3239	109 42 29	3253	108 17 23	3267
26	Regulus	W.	88 17 25	2958	89 48 30	2969	91 19 21	2980	92 49 59	2989
	Spica	W.	34 14 50	2954	35 46 0	2965	37 16 56	2975	38 47 40	2985
	SATURN	W.	32 33 59	2973	34 4 46	2980	35 35 24	2988	37 5 52	2996
	MARS	E.	42 24 37	3245	40 59 21	3258	39 34 20	3270	38 9 34	3284
	α Aquilæ	E.	69 15 23	3935	68 2 39	3968	66 50 28	4002	65 38 50	4037
	VENUS	E.	86 7 13	2904	84 34 59	2916	83 3 0	2928	81 31 17	2939
	SUN	E.	101 15 50	3332	99 52 15	3344	98 28 54	3354	97 5 45	3365
27	Regulus	W.	100 20 17	3032	101 49 50	3039	103 19 15	3046	104 48 31	3052
	Spica	W.	46 18 28	3026	47 48 8	3034	49 17 39	3040	50 47 2	3047
	SATURN	W.	44 35 51	3030	46 5 26	3036	47 34 54	3042	49 4 15	3047
	α Aquilæ	E.	59 49 43	4237	58 41 52	4283	57 34 44	4333	56 28 22	4385
	VENUS	E.	73 56 12	2993	72 25 51	3003	70 55 42	3013	69 25 45	3022
	SUN	E.	90 12 53	3410	88 50 48	3418	87 28 52	3425	86 7 4	3431
28	Spica	W.	58 12 17	3069	59 41 4	3072	61 9 48	3074	62 38 29	3077
	SATURN	W.	56 29 33	3066	57 58 24	3069	59 27 11	3071	60 55 56	3073
	α Aquilæ	E.	51 9 11	4701	50 8 12	4777	49 8 17	4860	48 9 30	4949
	VENUS	E.	61 58 50	3065	60 29 58	3074	59 1 17	3082	57 32 46	3090
	SUN	E.	79 9 41	3456	77 58 28	3460	76 37 19	3463	75 16 13	3464

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			° ′ ″		° ′ ″		° ′ ″		° ′ ″	
21	Regulus	W.	30 7 15	2415	31 50 29	2428	33 33 24	2443	35 15 58	2458
	Saturn	E.	26 23 27	2436	24 40 43	2460	22 58 33	2488	21 17 0	2516
	Antares	E.	69 58 0	2391	68 14 13	2408	66 30 49	2424	64 47 48	2441
	Mars	E.	97 18 55	2632	95 40 44	2649	94 2 56	2666	92 25 31	2684
22	Pollux	W.	80 24 16	2527	82 4 52	2544	83 45 4	2561	85 24 52	2579
	Regulus	W.	43 43 21	2538	45 23 41	2554	47 3 39	2571	48 43 14	2588
	Antares	E.	56 18 40	2525	54 38 2	2543	52 57 48	2560	51 17 58	2577
	Mars	E.	84 24 21	2773	82 49 18	2792	81 14 40	2811	79 40 26	2829
	α Aquilæ	E.	105 51 53	3423	104 30 3	3428	103 8 18	3433	101 46 39	3439
23	Pollux	W.	93 37 57	2665	95 15 24	2681	96 52 29	2698	98 29 11	2715
	Regulus	W.	56 55 25	2672	58 32 43	2688	60 9 39	2705	61 46 12	2721
	Antares	E.	43 4 41	2663	41 27 12	2680	39 50 5	2697	38 13 21	2713
	Mars	E.	71 55 12	2920	70 23 19	2939	68 51 50	2958	67 20 44	2975
	α Aquilæ	E.	95 0 46	3493	93 40 14	3506	92 19 57	3521	90 59 56	3537
	Sun	E.	130 7 14	3023	128 37 30	3041	127 8 8	3059	125 39 8	3076
24	Pollux	W.	106 27 16	2795	108 1 51	2810	109 36 6	2825	111 10 2	2840
	Regulus	W.	69 43 40	2800	71 18 8	2815	72 52 17	2830	74 26 6	2844
	Antares	E.	30 15 5	2793	28 40 28	2808	27 6 11	2823	25 32 13	2838
	Mars	E.	59 50 43	3062	58 21 47	3079	56 53 12	3096	55 24 57	3111
	α Aquilæ	E.	84 24 34	3629	83 6 31	3650	81 48 51	3672	80 31 34	3693
	Sun	E.	118 19 23	3161	116 52 27	3177	115 25 50	3193	113 59 32	3209
25	Regulus	W.	82 10 41	2912	83 42 45	2924	85 14 33	2936	86 46 6	2947
	Spica	W.	28 7 47	2909	29 39 55	2920	31 11 48	2932	32 43 26	2943
	Mars	E.	48 8 27	3188	46 42 4	3203	45 15 58	3217	43 50 9	3231
	α Aquilæ	E.	74 11 20	3819	72 56 37	3847	71 42 23	3875	70 28 38	3905
	Venus	E.	92 18 53	2852	90 45 33	2866	89 12 30	2878	87 39 43	2891
	Sun	E.	106 52 33	3282	105 28 0	3294	104 3 42	3307	102 39 39	3319
26	Regulus	W.	94 20 25	2999	95 50 39	3008	97 20 42	3017	98 50 34	3024
	Spica	W.	40 18 12	2994	41 48 32	3003	43 18 41	3012	44 48 39	3019
	Saturn	W.	38 36 10	3003	40 6 19	3011	41 36 18	3018	43 6 9	3025
	Mars	E.	36 45 4	3297	35 20 49	3309	33 56 48	3322	32 33 2	3333
	α Aquilæ	E.	64 27 47	4073	63 17 19	4111	62 7 28	4152	60 58 16	4193
	Venus	E.	79 59 48	2951	78 28 34	2962	76 57 33	2973	75 26 46	2983
	Sun	E.	95 42 49	3375	94 20 4	3385	92 57 30	3394	91 35 7	3402
27	Regulus	W.	106 17 40	3057	107 46 42	3063	109 15 37	3067	110 44 27	3072
	Spica	W.	52 16 17	3052	53 45 26	3057	55 14 28	3061	56 43 25	3065
	Saturn	W.	50 33 29	3052	52 2 38	3056	53 31 41	3060	55 0 39	3064
	α Aquilæ	E.	55 22 47	4440	54 18 2	4499	53 14 9	4562	52 11 11	4629
	Venus	E.	67 56 0	3031	66 26 26	3041	64 57 4	3049	63 27 52	3057
	Sun	E.	84 45 23	3438	83 23 49	3443	82 2 21	3447	80 40 58	3453
28	Spica	W.	64 7 7	3078	65 35 43	3080	67 4 17	3080	68 32 51	3081
	Saturn	W.	62 24 38	3074	63 53 19	3075	65 21 59	3075	66 50 39	3075
	α Aquilæ	E.	47 11 54	5045	46 15 34	5150	45 20 35	5264	44 27 1	5386
	Venus	E.	56 4 24	3098	54 36 12	3105	53 8 9	3114	51 40 16	3122
	Sun	E.	73 55 9	3467	72 34 8	3468	71 13 8	3469	69 52 9	3469

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	22 49 36.38	9.357	S. 7 28 25.7	+57.06	16 10.35	65.42	12 28.15	0.498
Frid.	2	22 53 20.70	9.337	7 5 33.0	57.32	16 10.10	65.35	12 15.95	0.518
Sat.	3	22 57 4.55	9.318	6 42 34.1	57.57	16 9.85	65.28	12 3.28	0.537
SUN.	4	23 0 47.94	9.299	6 19 29.6	+57.80	16 9.60	65.22	11 50.16	0.556
Mon.	5	23 4 30.90	9.281	5 56 19.6	58.02	16 9.34	65.15	11 36.59	0.574
Tues.	6	23 8 13.43	9.264	5 33 4.8	58.22	16 9.09	65.09	11 22.61	0.591
Wed.	7	23 11 55.55	9.247	5 9 45.5	+58.40	16 8.83	65.03	11 8.21	0.608
Thur.	8	23 15 37.28	9.231	4 46 22.2	58.55	16 8.58	64.98	10 53.43	0.624
Frid.	9	23 19 18.63	9.216	4 22 55.2	58.69	16 8.32	64.92	10 38.27	0.639
Sat.	10	23 22 59.62	9.201	3 59 24.9	+58.82	16 8.06	64.87	10 22.75	0.654
SUN.	11	23 26 40.28	9.187	3 35 51.8	58.93	16 7.81	64.83	10 6.89	0.668
Mon.	12	23 30 20.60	9.174	3 12 16.3	59.02	16 7.55	64.78	9 50.70	0.681
Tues.	13	23 34 0.62	9.162	2 48 38.7	+59.10	16 7.29	64.74	9 34.22	0.693
Wed.	14	23 37 40.35	9.150	2 24 59.4	59.16	16 7.03	64.71	9 17.44	0.704
Thur.	15	23 41 19.82	9.139	2 1 18.9	59.21	16 6.77	64.67	9 0.40	0.715
Frid.	16	23 44 59.04	9.129	1 37 37.4	+59.24	16 6.51	64.64	8 43.12	0.725
Sat.	17	23 48 38.03	9.121	1 13 55.5	59.25	16 6.24	64.61	8 25.61	0.734
SUN.	18	23 52 16.83	9.113	0 50 13.2	59.26	16 5.98	64.59	8 7.90	0.742
Mon.	19	23 55 55.45	9.106	0 26 31.2	+59.24	16 5.71	64.56	7 50.01	0.749
Tues.	20	23 59 33.91	9.099	S. 0 2 49.6	59.22	16 5.44	64.54	7 31.97	0.755
Wed.	21	0 3 12.24	9.095	N. 0 20 51.2	59.18	16 5.17	64.53	7 13.80	0.759
Thur.	22	0 6 50.46	9.091	0 44 30.8	+59.12	16 4.89	64.51	6 55.52	0.763
Frid.	23	0 10 28.61	9.088	1 8 9.0	59.05	16 4.62	64.50	6 37.16	0.766
Sat.	24	0 14 6.70	9.086	1 31 45.4	58.97	16 4.34	64.49	6 18.74	0.768
SUN.	25	0 17 44.74	9.085	1 55 19.7	+58.88	16 4.06	64.49	6 0.28	0.769
Mon.	26	0 21 22.78	9.084	2 18 51.5	58.77	16 3.78	64.48	5 41.82	0.769
Tues.	27	0 25 0.83	9.086	2 42 20.6	58.65	16 3.49	64.48	5 23.36	0.768
Wed.	28	0 28 38.90	9.088	3 5 46.5	+58.51	16 3.21	64.49	5 4.93	0.766
Thur.	29	0 32 17.03	9.090	3 29 8.9	58.35	16 2.93	64.49	4 46.56	0.764
Frid.	30	0 35 55.23	9.094	3 52 27.6	58.18	16 2.65	64.50	4 28.26	0.761
Sat.	31	0 39 33.52	9.098	4 15 42.1	58.00	16 2.36	64.52	4 10.04	0.757
SUN.	32	0 43 11.92	9.103	N. 4 38 52.0	+57.81	16 2.08	64.53	3 51.94	0.752

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.18$ from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	22 49 34.43	9.358	S. 7 28 37.7	+57.07	12 28.25	0.498	22 37 6.18
Frid.	2	22 53 18.79	9.338	7 5 44.8	57.33	12 16.06	0.518	22 41 2.74
Sat.	3	22 57 2.68	9.319	6 42 45.8	57.58	12 3.39	0.537	22 44 59.29
SUN.	4	23 0 46.11	9.300	6 19 41.0	+57.81	11 50.27	0.556	22 48 55.84
Mon.	5	23 4 29.11	9.282	5 56 30.9	58.02	11 36.71	0.574	22 52 52.40
Tues.	6	23 8 11.68	9.265	5 33 15.9	58.22	11 22.72	0.591	22 56 48.95
Wed.	7	23 11 53.84	9.249	5 9 56.4	+58.40	11 8.33	0.608	23 0 45.51
Thur.	8	23 15 35.60	9.233	4 46 32.9	58.56	10 53.54	0.624	23 4 42.06
Frid.	9	23 19 17.00	9.218	4 23 5.6	58.70	10 38.39	0.639	23 8 38.61
Sat.	10	23 22 58.04	9.203	3 59 35.1	+58.83	10 22.87	0.654	23 12 35.17
SUN.	11	23 26 38.73	9.189	3 36 1.8	58.94	10 7.01	0.668	23 16 31.72
Mon.	12	23 30 19.09	9.176	3 12 26.0	59.03	9 50.82	0.681	23 20 28.28
Tues.	13	23 33 59.16	9.164	2 48 48.2	+59.11	9 34.33	0.693	23 24 24.83
Wed.	14	23 37 38.94	9.152	2 25 8.6	59.17	9 17.56	0.704	23 28 21.38
Thur.	15	23 41 18.45	9.141	2 1 27.8	59.22	9 0.51	0.715	23 32 17.94
Frid.	16	23 44 57.71	9.131	1 37 46.1	+59.25	8 43.22	0.725	23 36 14.49
Sat.	17	23 48 36.75	9.123	1 14 3.8	59.27	8 25.71	0.734	23 40 11.04
SUN.	18	23 52 15.60	9.115	0 50 21.3	59.27	8 8.00	0.742	23 44 7.60
Mon.	19	23 55 54.26	9.108	0 26 39.0	+59.26	7 50.11	0.749	23 48 4.15
Tues.	20	23 59 32.77	9.101	S. 0 2 57.1	59.23	7 32.06	0.755	23 52 0.70
Wed.	21	0 3 11.15	9.096	N. 0 20 44.0	59.19	7 13.89	0.760	23 55 57.26
Thur.	22	0 6 49.41	9.093	0 44 24.0	+59.14	6 55.60	0.764	23 59 53.81
Frid.	23	0 10 27.61	9.090	1 8 2.5	59.07	6 37.24	0.766	0 3 50.36
Sat.	24	0 14 5.74	9.088	1 31 39.2	58.99	6 18.82	0.768	0 7 46.92
SUN.	25	0 17 43.84	9.087	1 55 13.8	+58.89	6 0.36	0.769	0 11 43.47
Mon.	26	0 21 21.92	9.086	2 18 45.9	58.78	5 41.89	0.769	0 15 40.03
Tues.	27	0 25 0.01	9.088	2 42 15.2	58.66	5 23.43	0.769	0 19 36.58
Wed.	28	0 28 38.13	9.090	3 5 41.5	+58.52	5 5.00	0.767	0 23 33.13
Thur.	29	0 32 16.31	9.092	3 29 4.3	58.37	4 46.62	0.764	0 27 29.69
Frid.	30	0 35 54.56	9.096	3 52 23.2	58.20	4 28.31	0.761	0 31 26.24
Sat.	31	0 39 32.89	9.100	4 15 38.0	58.02	4 10.10	0.757	0 35 22.80
SUN.	32	0 43 11.34	9.105	N. 4 38 48.3	+57.83	3 51.99	0.752	0 39 19.35

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that south declinations are decreasing; north declinations, increasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	60	340 55 25.2	55 19.7	150.42	− 0.65	9.9962464	+46.4	1 22 40.24
2	61	341 55 34.7	55 29.1	150.35	0.66	9.9963583	46.8	1 18 44.33
3	62	342 55 42.6	55 36 8	150.29	0.63	9.9964710	47.1	1 14 48.42
4	63	343 55 48.9	55 43.0	150.22	− 0.59	9.9965842	+47.3	1 10 52.51
5	64	344 55 53.4	55 47.4	150.15	0.51	9.9966979	47.4	1 6 56.60
6	65	345 55 56.2	55 50.1	150.08	0.41	9.9968119	47.6	1 3 0.70
7	66	346 55 57.2	55 51.0	150.00	− 0.30	9.9969263	+47.7	0 59 4.79
8	67	347 55 56.1	55 49.8	149.91	0.18	9.9970409	47.8	0 55 8.88
9	68	348 55 53.2	55 46.8	149.83	− 0.04	9.9971557	47.9	0 51 12.97
10	69	349 55 48.0	55 41.4	149.74	+ 0.09	9.9972708	+48.0	0 47 17.06
11	70	350 55 40.8	55 34.1	149.65	0.20	9.9973862	48.2	0 43 21.16
12	71	351 55 31.4	55 24.6	149.56	0.31	9.9975019	48.3	0 39 25.25
13	72	352 55 19.7	55 12.8	149.47	+ 0.39	9.9976181	+48.5	0 35 29.34
14	73	353 55 5.9	54 58.9	149.38	0.44	9.9977347	48.8	0 31 33.43
15	74	354 54 49.7	54 42.6	149.28	0.46	9.9978521	49.1	0 27 37.52
16	75	355 54 31.3	54 24.1	149.19	+ 0.46	9.9979702	+49.4	0 23 41.62
17	76	356 54 10.6	54 3.3	149.09	0.41	9.9980890	49.7	0 19 45.71
18	77	357 53 47.7	53 40.3	149.00	0.35	9.9982087	50.1	0 15 49.80
19	78	358 53 22.6	53 15.1	148.91	+ 0.26	9.9983293	+50.4	0 11 53.89
20	79	359 52 55.3	52 47.6	148.82	0.15	9.9984508	50.8	0 7 57.99
21	80	0 52 26.0	52 18.2	148.73	+ 0.02	9.9985731	51.1	0 4 2.08
22	81	1 51 54.5	51 46.6	148.65	− 0.11	9.9986966	+51.6	0 0 6.17 23 56 10.26
23	82	2 51 21.1	51 13.1	148.56	0.24	9.9988209	52.0	23 52 14.36
24	83	3 50 45.8	50 37.7	148.49	0.37	9.9989461	52.4	23 48 18.45
25	84	4 50 8.6	50 0.4	148.41	− 0.49	9.9990722	+52.6	23 44 22.54
26	85	5 49 29.6	49 21.3	148.33	0.59	9.9991987	52.8	23 40 26.63
27	86	6 48 48.7	48 40.3	148.26	0.66	9.9993258	53.0	23 36 30.72
28	87	7 48 6.2	47 57.7	148.19	− 0.70	9.9994532	+53.1	23 32 34.81
29	88	8 47 21.8	47 13.2	148.11	0.72	9.9995809	53.2	23 28 38.91
30	89	9 46 35.5	46 26.8	148.04	0.70	9.9997086	53.1	23 24 43.00
31	90	10 45 47.7	45 38.8	147.97	0.65	9.9998360	53.1	23 20 47.09
32	91	11 44 58.0	44 49.0	147.89	− 0.58	9.9999633	+52.9	23 16 51.18

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour, $-9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 47.1	14 47.2	54 8.9	−0.08	54 9.3	+0.13	20 16.2	2.13	23.6
2	14 47.9	14 49.3	54 12.0	+0.32	54 16.9	0.50	21 6.7	2.07	24.6
3	14 51.2	14 53.6	54 23.9	0.67	54 32.9	0.82	21 55.6	1.99	25.6
4	14 56.5	14 59.8	54 43.5	+0.95	54 55.6	+1.06	22 42.3	1.90	26.6
5	15 3.4	15 7.3	55 8.9	1.15	55 23.1	1.22	23 27.1	1.83	27.6
6	15 11.4	15 15.6	55 38.2	1.28	55 53.7	1.30	δ		28.6
7	15 19.9	15 24.2	56 9.5	+1.32	56 25.4	+1.32	0 10.6	1.80	29.6
8	15 28.6	15 32.8	56 41.2	1.30	56 56.7	1.28	0 53.8	1.80	0.9
9	15 36.9	15 40.8	57 11.8	1.23	57 26.3	1.19	1 37.5	1.85	1.9
10	15 44.7	15 48.3	57 40.3	+1.14	57 53.6	+1.08	2 23.1	1.95	2.9
11	15 51.7	15 55.0	58 6.2	1.03	58 18.2	0.97	3 11.8	2.11	3.9
12	15 58.0	16 0.9	58 29.4	0.90	58 39.9	0.84	4 4.6	2.29	4.9
13	16 3.5	16 6.0	58 49.6	+0.78	58 58.6	+0.71	5 1.9	2.48	5.9
14	16 8.1	16 10.1	59 6.6	0.63	59 13.7	0.55	6 3.2	2.61	6.9
15	16 11.7	16 13.0	59 19.7	0.45	59 24.5	0.34	7 6.4	2.63	7.9
16	16 13.9	16 14.4	59 27.8	+0.21	59 29.6	+0.07	8 8.7	2.52	8.9
17	16 14.4	16 13.8	59 29.5	−0.09	59 27.5	−0.25	9 7.9	2.38	9.9
18	16 12.7	16 11.0	59 23.4	0.43	59 17.1	0.62	10 2.9	2.20	10.9
19	16 8.7	16 5.7	59 8.5	−0.81	58 57.7	−0.99	10 53.8	2.05	11.9
20	16 2.2	15 58.1	58 44.7	1.17	58 29.6	1.33	11 41.6	1.94	12.9
21	15 53.5	15 48.5	58 12.7	1.47	57 54.3	1.58	12 27.4	1.89	13.9
22	15 43.1	15 37.6	57 34.7	−1.67	57 14.3	−1.72	13 12.6	1.88	14.9
23	15 31.9	15 26.2	56 53.4	1.75	56 32.4	1.73	13 58.2	1.92	15.9
24	15 20.6	15 15.2	56 11.8	1.68	55 52.0	1.61	14 45.0	1.98	16.9
25	15 10.0	15 5.3	55 33.2	−1.51	55 15.7	−1.38	15 33.6	2.06	17.9
26	15 1.1	14 57.3	55 0.3	1.22	54 46.5	1.05	16 24.0	2.13	18.9
27	14 54.2	14 51.7	54 35.0	0.86	54 25.9	0.66	17 15.7	2.16	19.9
28	14 49.9	14 48.8	54 19.2	−0.45	54 15.1	−0.23	18 7.4	2.14	20.9
29	14 48.4	14 48.7	54 13.7	−0.01	54 14.8	+0.20	18 58.4	2.09	21.9
30	14 49.7	14 51.5	54 18.6	+0.43	54 25.0	0.63	19 47.8	2.02	22.9
31	14 53.8	14 56.9	54 33.7	0.83	54 44.8	1.02	20 35.1	1.93	23.9
32	15 0.5	15 4.6	54 58.0	+1.18	55 13.1	+1.33	21 20.4	1.85	24.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 11 17.89	2.2415	S.28 35 6.7	0.197
1	18 13 32.38	2.2413	28 34 50.7	0.336
2	18 15 46.85	2.2411	28 34 26.4	0.474
3	18 18 1.31	2.2408	28 33 53.8	0.612
4	18 20 15.75	2.2404	28 33 12.9	0.750
5	18 22 30.16	2.2400	28 32 23.8	0.888
6	18 24 44.55	2.2396	28 31 26.4	1.026
7	18 26 58.91	2.2390	28 30 20.7	1.164
8	18 29 13.23	2.2383	28 29 6.7	1.302
9	18 31 27.51	2.2376	28 27 44.5	1.439
10	18 33 41.75	2.2368	28 26 14.0	1.577
11	18 35 55.93	2.2359	28 24 35.3	1.714
12	18 38 10.06	2.2350	28 22 48.3	1.852
13	18 40 24.13	2.2340	28 20 53.1	1.988
14	18 42 38.14	2.2330	28 18 49.7	2.125
15	18 44 52.09	2.2319	28 16 38.1	2.262
16	18 47 5.97	2.2307	28 14 18.3	2.398
17	18 49 19.77	2.2294	28 11 50.3	2.535
18	18 51 33.50	2.2281	28 9 14.1	2.671
19	18 53 47.15	2.2267	28 6 29.8	2.806
20	18 56 0.71	2.2252	28 3 37.4	2.942
21	18 58 14.17	2.2236	28 0 36.8	3.077
22	19 0 27.54	2.2220	27 57 28.1	3.212
23	19 2 40.81	2.2204	S.27 54 11.4	3.346

FRIDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 4 53.99	2.2187	S.27 50 46.6	3.481
1	19 7 7.06	2.2169	27 47 13.7	3.615
2	19 9 20.02	2.2151	27 43 32.8	3.748
3	19 11 32.87	2.2132	27 39 43.9	3.882
4	19 13 45.60	2.2112	27 35 47.0	4.015
5	19 15 58.21	2.2092	27 31 42.1	4.148
6	19 18 10.70	2.2072	27 27 29.3	4.280
7	19 20 23.07	2.2051	27 23 8.5	4.412
8	19 22 35.31	2.2028	27 18 39.9	4.543
9	19 24 47.41	2.2005	27 14 3.4	4.674
10	19 26 59.37	2.1982	27 9 19.0	4.805
11	19 29 11.19	2.1958	27 4 26.8	4.935
12	19 31 22.87	2.1934	26 59 26.8	5.065
13	19 33 34.40	2.1910	26 54 19.0	5.194
14	19 35 45.79	2.1886	26 49 3.5	5.323
15	19 37 57.03	2.1860	26 43 40.3	5.451
16	19 40 8.11	2.1834	26 38 9.4	5.579
17	19 42 19.04	2.1808	26 32 30.8	5.707
18	19 44 29.81	2.1782	26 26 44.6	5.833
19	19 46 40.42	2.1754	26 20 50.8	5.959
20	19 48 50.86	2.1726	26 14 49.5	6.085
21	19 51 1.13	2.1697	26 8 40.6	6.211
22	19 53 11.23	2.1669	26 2 24.2	6.335
23	19 55 21.16	2.1641	25 56 0.4	6.459
24	19 57 30.92	2.1612	S.25 49 29.1	6.583

SATURDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 57 30.92	2.1612	S.25 49 29.1	6.583
1	19 59 40.50	2.1582	25 42 50.4	6.706
2	20 1 49.90	2.1553	25 36 4.4	6.828
3	20 3 59.13	2.1523	25 29 11.0	6.951
4	20 6 8.18	2.1493	25 22 10.3	7.072
5	20 8 17.04	2.1462	25 15 2.4	7.192
6	20 10 25.72	2.1431	25 7 47.3	7.312
7	20 12 34.21	2.1399	25 0 25.0	7.432
8	20 14 42.51	2.1368	24 52 55.5	7.551
9	20 16 50.63	2.1337	24 45 18.9	7.668
10	20 18 58.56	2.1305	24 37 35.3	7.786
11	20 21 6.29	2.1272	24 29 44.6	7.903
12	20 23 13.82	2.1239	24 21 46.9	8.019
13	20 25 21.16	2.1207	24 13 42.3	8.134
14	20 27 28.31	2.1175	24 5 30.8	8.249
15	20 29 35.26	2.1142	23 57 12.4	8.363
16	20 31 42.01	2.1109	23 48 47.2	8.477
17	20 33 48.57	2.1076	23 40 15.2	8.590
18	20 35 54.93	2.1043	23 31 36.4	8.702
19	20 38 1.09	2.1010	23 22 50.9	8.813
20	20 40 7.05	2.0977	23 13 58.8	8.923
21	20 42 12.81	2.0943	23 5 0.1	9.033
22	20 44 18.37	2.0910	22 55 54.8	9.142
23	20 46 23.73	2.0876	S.22 46 43.0	9.251

SUNDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 48 28.88	2.0842	S.22 37 24.7	9.359
1	20 50 33.83	2.0809	22 27 59.9	9.466
2	20 52 38.59	2.0776	22 18 28.8	9.572
3	20 54 43.14	2.0742	22 8 51.3	9.677
4	20 56 47.49	2.0709	21 59 7.5	9.782
5	20 58 51.64	2.0676	21 49 17.5	9.886
6	21 0 55.60	2.0643	21 39 21.2	9.989
7	21 2 59.36	2.0609	21 29 18.8	10.091
8	21 5 2.91	2.0575	21 19 10.3	10.193
9	21 7 6.26	2.0542	21 8 55.7	10.294
10	21 9 9.41	2.0509	20 58 35.0	10.395
11	21 11 12.36	2.0476	20 48 8.3	10.494
12	21 13 15.12	2.0443	20 37 35.7	10.592
13	21 15 17.68	2.0411	20 26 57.3	10.689
14	21 17 20.05	2.0378	20 16 13.0	10.786
15	21 19 22.22	2.0346	20 5 22.9	10.882
16	21 21 24.20	2.0314	19 54 27.1	10.977
17	21 23 25.99	2.0282	19 43 25.6	11.072
18	21 25 27.58	2.0249	19 32 18.5	11.165
19	21 27 28.98	2.0218	19 21 5.8	11.257
20	21 29 30.20	2.0187	19 9 47.6	11.349
21	21 31 31.23	2.0156	18 58 23.9	11.441
22	21 33 32.07	2.0125	18 46 54.7	11.531
23	21 35 32.73	2.0094	18 35 20.2	11.619
24	21 37 33.20	2.0063	S.18 23 40.4	11.707

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 37 33.20	2.0063	S. 18 23 40.4	11.707
1	21 39 33.49	2.0033	18 11 55.3	11.795
2	21 41 33.60	2.0004	18 0 5.0	11.882
3	21 43 33.54	1.9975	17 48 9.5	11.968
4	21 45 33.30	1.9946	17 36 8.8	12.054
5	21 47 32.89	1.9917	17 24 3.0	12.138
6	21 49 32.31	1.9889	17 11 52.2	12.221
7	21 51 31.56	1.9861	16 59 36.5	12.303
8	21 53 30.64	1.9833	16 47 15.8	12.385
9	21 55 29.55	1.9805	16 34 50.3	12.465
10	21 57 28.30	1.9778	16 22 20.0	12.545
11	21 59 26.89	1.9751	16 9 44.9	12.623
12	22 1 25.31	1.9724	15 57 5.2	12.701
13	22 3 23.57	1.9699	15 44 20.8	12.778
14	22 5 21.69	1.9674	15 31 31.8	12.855
15	22 7 19.66	1.9649	15 18 38.2	12.931
16	22 9 17.48	1.9624	15 5 40.1	13.005
17	22 11 15.15	1.9599	14 52 37.6	13.078
18	22 13 12.67	1.9575	14 39 30.8	13.150
19	22 15 10.05	1.9552	14 26 19.6	13.222
20	22 17 7.29	1.9529	14 13 4.1	13.293
21	22 19 4.40	1.9507	13 59 44.4	13.362
22	22 21 1.37	1.9485	13 46 20.6	13.431
23	22 22 58.22	1.9464	S. 13 32 52.7	13.499

TUESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 24 54.94	1.9443	S. 13 19 20.7	13.567
1	22 26 51.54	1.9422	13 5 44.7	13.633
2	22 28 48.01	1.9402	12 52 4.8	13.698
3	22 30 44.36	1.9382	12 38 21.0	13.762
4	22 32 40.60	1.9363	12 24 33.4	13.825
5	22 34 36.72	1.9344	12 10 42.0	13.888
6	22 36 32.73	1.9327	11 56 46.8	13.950
7	22 38 28.64	1.9309	11 42 48.0	14.009
8	22 40 24.44	1.9292	11 28 45.7	14.068
9	22 42 20.14	1.9276	11 14 39.8	14.127
10	22 44 15.75	1.9261	11 0 30.4	14.185
11	22 46 11.27	1.9245	10 46 17.6	14.242
12	22 48 6.69	1.9230	10 32 1.4	14.297
13	22 50 2.03	1.9216	10 17 41.9	14.352
14	22 51 57.29	1.9202	10 3 19.2	14.405
15	22 53 52.46	1.9189	9 48 53.3	14.458
16	22 55 47.56	1.9177	9 34 24.2	14.510
17	22 57 42.59	1.9166	9 19 52.1	14.560
18	22 59 37.55	1.9155	9 5 17.0	14.610
19	23 1 32.45	1.9145	8 50 38.9	14.659
20	23 3 27.29	1.9134	8 35 57.9	14.707
21	23 5 22.06	1.9124	8 21 14.1	14.753
22	23 7 16.78	1.9116	8 6 27.5	14.799
23	23 9 11.45	1.9108	7 51 38.2	14.844
24	23 11 6.08	1.9101	S. 7 36 46.2	14.888

WEDNESDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 11 6.08	1.9101	S. 7 36 46.2	14.888
1	23 13 0.66	1.9094	7 21 51.6	14.931
2	23 14 55.21	1.9088	7 6 54.5	14.972
3	23 16 49.72	1.9082	6 51 54.9	15.013
4	23 18 44.20	1.9077	6 36 52.9	15.053
5	23 20 38.65	1.9073	6 21 48.5	15.092
6	23 22 33.08	1.9070	6 6 41.9	15.129
7	23 24 27.49	1.9067	5 51 33.0	15.166
8	23 26 21.88	1.9064	5 36 21.9	15.202
9	23 28 16.26	1.9063	5 21 8.8	15.236
10	23 30 10.63	1.9063	5 5 53.6	15.270
11	23 32 5.01	1.9063	4 50 36.4	15.302
12	23 33 59.39	1.9063	4 35 17.4	15.333
13	23 35 53.77	1.9064	4 19 56.5	15.363
14	23 37 48.16	1.9066	4 4 33.8	15.393
15	23 39 42.57	1.9069	3 49 9.3	15.423
16	23 41 36.99	1.9073	3 33 43.1	15.450
17	23 43 31.44	1.9077	3 18 15.3	15.475
18	23 45 25.91	1.9081	3 2 46.1	15.499
19	23 47 20.41	1.9087	2 47 15.4	15.524
20	23 49 14.95	1.9093	2 31 43.2	15.547
21	23 51 9.53	1.9100	2 16 9.7	15.568
22	23 53 4.15	1.9108	2 0 35.0	15.589
23	23 54 58.82	1.9116	S. 1 44 59.0	15.609

THURSDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 56 53.54	1.9125	S. 1 29 21.9	15.627
1	23 58 48.32	1.9135	1 13 43.7	15.645
2	0 0 43.16	1.9146	0 58 4.5	15.661
3	0 2 38.07	1.9157	0 42 24.4	15.676
4	0 4 33.05	1.9169	0 26 43.4	15.690
5	0 6 28.10	1.9182	S. 0 11 1.6	15.702
6	0 8 23.23	1.9195	N. 0 4 40.9	15.714
7	0 10 18.44	1.9210	0 20 24.1	15.725
8	0 12 13.75	1.9226	0 36 7.9	15.735
9	0 14 9.15	1.9242	0 51 52.3	15.743
10	0 16 4.65	1.9258	1 7 37.1	15.750
11	0 18 0.25	1.9275	1 23 22.3	15.756
12	0 19 55.95	1.9293	1 39 7.8	15.760
13	0 21 51.76	1.9312	1 54 53.5	15.763
14	0 23 47.69	1.9332	2 10 39.4	15.766
15	0 25 43.75	1.9353	2 26 25.5	15.768
16	0 27 39.93	1.9374	2 42 11.6	15.768
17	0 29 36.24	1.9396	2 57 57.6	15.767
18	0 31 32.68	1.9418	3 13 43.6	15.765
19	0 33 29.26	1.9442	3 29 29.4	15.761
20	0 35 25.99	1.9467	3 45 14.9	15.756
21	0 37 22.86	1.9492	4 1 0.1	15.751
22	0 39 19.89	1.9518	4 16 45.0	15.743
23	0 41 17.08	1.9545	4 32 29.3	15.733
24	0 43 14.43	1.9572	N. 4 48 13.0	15.723

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 9.					**SUNDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	0 43 14.43	1.9572	N. 4 48 13.0	15.723	0	2 21 50.73	2.1800	N.16 46 24.3	13.652
1	0 45 11.95	1.9601	5 3 56.1	15.713	1	2 24 1.72	2.1863	17 0 1.1	13.572
2	0 47 9.64	1.9630	5 19 38.6	15.702	2	2 26 13.09	2.1927	17 13 33.0	13.491
3	0 49 7.51	1.9660	5 35 20.3	15.688	3	2 28 24.85	2.1992	17 27 0.0	13.408
4	0 51 5.56	1.9691	5 51 1.1	15.673	4	2 30 37.00	2.2057	17 40 22.0	13.323
5	0 53 3.80	1.9722	6 6 41.0	15.657	5	2 32 49.54	2.2122	17 53 38.8	13.237
6	0 55 2.22	1.9754	6 22 19.9	15.639	6	2 35 2.47	2.2189	18 6 50.4	13.149
7	0 57 0.84	1.9788	6 37 57.7	15.621	7	2 37 15.80	2.2256	18 19 56.7	13.060
8	0 58 59.67	1.9822	6 53 34.4	15.601	8	2 39 29.54	2.2323	18 32 57.6	12.968
9	1 0 58.70	1.9856	7 9 9.8	15.579	9	2 41 43.68	2.2390	18 45 52.9	12.875
10	1 2 57.94	1.9892	7 24 43.9	15.557	10	2 43 58.22	2.2458	18 58 42.6	12.782
11	1 4 57.40	1.9928	7 40 16.6	15.533	11	2 46 13.18	2.2527	19 11 26.7	12.686
12	1 6 57.07	1.9964	7 55 47.9	15.508	12	2 48 28.55	2.2596	19 24 4.9	12.588
13	1 8 56.97	2.0002	8 11 17.6	15.482	13	2 50 44.33	2.2665	19 36 37.2	12.488
14	1 10 57.10	2.0041	8 26 45.7	15.453	14	2 53 0.53	2.2735	19 49 3.5	12.387
15	1 12 57.46	2.0080	8 42 12.0	15.423	15	2 55 17.15	2.2805	20 1 23.6	12.283
16	1 14 58.06	2.0121	8 57 36.5	15.393	16	2 57 34.19	2.2875	20 13 37.5	12.179
17	1 16 58.91	2.0162	9 12 59.2	15.362	17	2 59 51.65	2.2945	20 25 45.1	12.074
18	1 19 0.01	2.0204	9 28 19.9	15.328	18	3 2 9.53	2.3016	20 37 46.4	11.967
19	1 21 1.36	2.0247	9 43 38.6	15.294	19	3 4 27.84	2.3087	20 49 41.1	11.856
20	1 23 2.97	2.0289	9 58 55.2	15.257	20	3 6 46.58	2.3158	21 1 29.1	11.744
21	1 25 4.83	2.0333	10 14 9.5	15.219	21	3 9 5.74	2.3229	21 13 10.4	11.632
22	1 27 6.96	2.0378	10 29 21.5	15.181	22	3 11 25.33	2.3301	21 24 44.9	11.518
23	1 29 9.37	2.0424	N.10 44 31.2	15.141	23	3 13 45.36	2.3374	N.21 36 12.5	11.401
	SATURDAY 10.					**MONDAY 12.**			
0	1 31 12.05	2.0470	N.10 59 38.4	15.099	0	3 16 5.82	2.3446	N.21 47 33.0	11.282
1	1 33 15.01	2.0517	11 14 43.1	15.056	1	3 18 26.71	2.3518	21 58 46.4	11.163
2	1 35 18.26	2.0566	11 29 45.1	15.011	2	3 20 48.03	2.3590	22 9 52.6	11.042
3	1 37 21.80	2.0615	11 44 44.4	14.965	3	3 23 9.79	2.3662	22 20 51.4	10.918
4	1 39 25.64	2.0664	11 59 40.9	14.917	4	3 25 31.98	2.3734	22 31 42.8	10.793
5	1 41 29.77	2.0713	12 14 34.5	14.869	5	3 27 54.60	2.3807	22 42 26.6	10.667
6	1 43 34.20	2.0764	12 29 25.2	14.819	6	3 30 17.66	2.3879	22 53 2.8	10.538
7	1 45 38.94	2.0816	12 44 12.8	14.767	7	3 32 41.15	2.3951	23 3 31.2	10.408
8	1 47 44.00	2.0869	12 58 57.2	14.713	8	3 35 5.07	2.4022	23 13 51.8	10.277
9	1 49 49.37	2.0922	13 13 38.4	14.659	9	3 37 29.42	2.4094	23 24 4.5	10.144
10	1 51 55.06	2.0976	13 28 16.3	14.602	10	3 39 54.20	2.4166	23 34 9.1	10.009
11	1 54 1.08	2.1030	13 42 50.7	14.543	11	3 42 19.41	2.4238	23 44 5.6	9.873
12	1 56 7.42	2.1085	13 57 21.5	14.483	12	3 44 45.06	2.4310	23 53 53.9	9.735
13	1 58 14.10	2.1141	14 11 48.7	14.423	13	3 47 11.13	2.4381	24 3 33.8	9.595
14	2 0 21.12	2.1197	14 26 12.3	14.362	14	3 49 37.63	2.4452	24 13 5.3	9.453
15	2 2 28.47	2.1254	14 40 32.1	14.298	15	3 52 4.55	2.4522	24 22 28.2	9.310
16	2 4 36.17	2.1313	14 54 48.0	14.232	16	3 54 31.89	2.4592	24 31 42.5	9.165
17	2 6 44.23	2.1372	15 8 59.9	14.165	17	3 56 59.65	2.4662	24 40 48.0	9.018
18	2 8 52.64	2.1432	15 23 7.8	14.097	18	3 59 27.83	2.4731	24 49 44.7	8.871
19	2 11 1.41	2.1492	15 37 11.5	14.026	19	4 1 56.42	2.4800	24 58 32.5	8.721
20	2 13 10.54	2.1552	15 51 10.9	13.954	20	4 4 25.43	2.4869	25 7 11.2	8.569
21	2 15 20.03	2.1612	16 5 6.0	13.882	21	4 6 54.85	2.4937	25 15 40.8	8.417
22	2 17 29.89	2.1674	16 18 56.7	13.807	22	4 9 24.67	2.5004	25 24 1.2	8.262
23	2 19 40.12	2.1737	16 32 42.8	13.730	23	4 11 54.90	2.5072	25 32 12.3	8.107
24	2 21 50.73	2.1800	N.16 46 24.3	13.652	24	4 14 25.53	2.5138	N.25 40 14.0	7.949

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 13.					**THURSDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 14 25.53	2.5138	N.25 40 11.0	7.949	0	6 20 42.57	2.6936	N.28 36 25.1	0.950
1	4 16 56.56	2.5203	25 48 6.2	7.790	1	6 23 24.18	2.6934	28 35 22.1	1.150
2	4 19 27.97	2.5268	25 55 48.8	7.629	2	6 26 5.78	2.6931	28 34 7.1	1.350
3	4 21 59.77	2.5332	26 3 21.7	7.467	3	6 28 47.35	2.6926	28 32 40.1	1.550
4	4 24 31.95	2.5396	26 10 44.8	7.303	4	6 31 28.89	2.6919	28 31 1.1	1.749
5	4 27 4.51	2.5458	26 17 58.1	7.139	5	6 34 10.38	2.6910	28 29 10.2	1.948
6	4 29 37.45	2.5521	26 25 1.5	6.972	6	6 36 51.81	2.6899	28 27 7.3	2.147
7	4 32 10.76	2.5581	26 31 54.8	6.804	7	6 39 33.17	2.6887	28 24 52.5	2.346
8	4 34 44.42	2.5640	26 38 38.0	6.636	8	6 42 14.46	2.6874	28 22 25.8	2.545
9	4 37 18.44	2.5699	26 45 11.1	6.466	9	6 44 55.66	2.6858	28 19 47.1	2.743
10	4 39 52.81	2.5757	26 51 33.9	6.293	10	6 47 36.76	2.6841	28 16 56.6	2.941
11	4 42 27.53	2.5815	26 57 46.3	6.119	11	6 50 17.75	2.6821	28 13 54.2	3.138
12	4 45 2.59	2.5871	27 3 48.2	5.944	12	6 52 58.61	2.6799	28 10 40.0	3.335
13	4 47 37.98	2.5925	27 9 39.6	5.769	13	6 55 39.34	2.6777	28 7 14.0	3.531
14	4 50 13.69	2.5979	27 15 20.5	5.592	14	6 58 19.94	2.6754	28 3 36.3	3.727
15	4 52 49.73	2.6032	27 20 50.7	5.413	15	7 1 0.39	2.6728	27 59 46.8	3.922
16	4 55 26.08	2.6083	27 26 10.1	5.233	16	7 3 40.68	2.6701	27 55 45.6	4.116
17	4 58 2.73	2.6133	27 31 18.7	5.053	17	7 6 20.80	2.6672	27 51 32.8	4.309
18	5 0 39.68	2.6182	27 36 16.5	4.871	18	7 9 0.74	2.6641	27 47 8.5	4.502
19	5 3 16.92	2.6230	27 41 3.3	4.688	19	7 11 40.49	2.6609	27 42 32.6	4.695
20	5 5 54.44	2.6276	27 45 39.1	4.505	20	7 14 20.05	2.6576	27 37 45.1	4.887
21	5 8 32.23	2.6321	27 50 3.9	4.320	21	7 16 59.40	2.6541	27 32 46.2	5.077
22	5 11 10.29	2.6365	27 54 17.5	4.133	22	7 19 38.54	2.6504	27 27 35.9	5.266
23	5 13 48.61	2.6407	N.27 58 19.9	3.946	23	7 22 17.45	2.6466	N.27 22 14.3	5.454
	WEDNESDAY 14.					**FRIDAY 16.**			
0	5 16 27.17	2.6447	N.28 2 11.0	3.757	0	7 24 56.13	2.6427	N.27 16 41.4	5.642
1	5 19 5.97	2.6487	28 5 50.8	3.568	1	7 27 34.57	2.6386	27 10 57.2	5.829
2	5 21 45.01	2.6525	28 9 19.2	3.378	2	7 30 12.76	2.6343	27 5 1.9	6.014
3	5 24 24.27	2.6561	28 12 36.2	3.188	3	7 32 50.69	2.6299	26 58 55.5	6.199
4	5 27 3.74	2.6596	28 15 41.8	2.996	4	7 35 28.35	2.6255	26 52 38.0	6.383
5	5 29 43.41	2.6628	28 18 35.8	2.803	5	7 38 5.75	2.6210	26 46 9.5	6.565
6	5 32 23.28	2.6660	28 21 18.2	2.610	6	7 40 42.87	2.6162	26 39 30.2	6.745
7	5 35 3.33	2.6689	28 23 49.0	2.417	7	7 43 19.70	2.6113	26 32 40.1	6.926
8	5 37 43.55	2.6718	28 26 8.2	2.222	8	7 45 56.23	2.6063	26 25 39.1	7.106
9	5 40 23.94	2.6745	28 28 15.7	2.027	9	7 48 32.46	2.6012	26 18 27.4	7.284
10	5 43 4.49	2.6770	28 30 11.4	1.831	10	7 51 8.38	2.5961	26 11 5.0	7.460
11	5 45 45.18	2.6793	28 31 55.4	1.635	11	7 53 43.99	2.5908	26 3 32.2	7.634
12	5 48 26.00	2.6814	28 33 27.6	1.438	12	7 56 19.28	2.5854	25 55 49.0	7.807
13	5 51 6.95	2.6834	28 34 48.0	1.241	13	7 58 54.24	2.5799	25 47 55.4	7.980
14	5 53 48.01	2.6852	28 35 56.5	1.043	14	8 1 28.87	2.5743	25 39 51.4	8.152
15	5 56 29.18	2.6869	28 36 53.1	0.844	15	8 4 3.16	2.5687	25 31 37.2	8.321
16	5 59 10.44	2.6883	28 37 37.8	0.646	16	8 6 37.11	2.5629	25 23 12.9	8.488
17	6 1 51.78	2.6896	28 38 10.6	0.447	17	8 9 10.71	2.5571	25 14 38.6	8.655
18	6 4 33.19	2.6907	28 38 31.4	0.247	18	8 11 43.96	2.5512	25 5 54.3	8.820
19	6 7 14.66	2.6916	28 38 40.3	+ 0.048	19	8 14 16.85	2.5452	24 57 0.2	8.983
20	6 9 56.18	2.6924	28 38 37.2	− 0.151	20	8 16 49.38	2.5391	24 47 56.3	9.146
21	6 12 37.75	2.6930	28 38 22.2	0.350	21	8 19 21.54	2.5329	24 38 42.7	9.307
22	6 15 19.34	2.6933	28 37 55.2	0.551	22	8 21 53.33	2.5267	24 29 19.5	9.465
23	6 18 0.95	2.6936	28 37 16.1	0.751	23	8 24 24.75	2.5205	24 19 46.9	9.622
24	6 20 42.57	2.6936	N.28 33 25.1	0.950	24	8 26 55.79	2.5142	N.24 10 4.9	9.778

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 26 55.79	2.5142	N.24 10 4.9	9.778
1	8 29 26.45	2.5077	24 0 13.6	9.932
2	8 31 56.72	2.5013	23 50 13.1	10.084
3	8 34 26.61	2.4949	23 40 3.5	10.235
4	8 36 56.11	2.4883	23 29 44.9	10.384
5	8 39 25.21	2.4818	23 19 17.4	10.531
6	8 41 53.92	2.4752	23 8 41.2	10.676
7	8 44 22.23	2.4685	22 57 56.3	10.820
8	8 46 50.14	2.4619	22 47 2.8	10.963
9	8 49 17.66	2.4552	22 36 0.7	11.104
10	8 51 44.77	2.4484	22 24 50.3	11.242
11	8 54 11.47	2.4417	22 13 31.6	11.379
12	8 56 37.77	2.4349	22 2 4.8	11.514
13	8 59 3.66	2.4282	21 50 29.9	11.647
14	9 1 29.15	2.4214	21 38 47.1	11.779
15	9 3 54.23	2.4146	21 26 56.4	11.909
16	9 6 18.90	2.4078	21 14 58.0	12.037
17	9 8 43.16	2.4010	21 2 52.0	12.163
18	9 11 7.02	2.3942	20 50 38.5	12.287
19	9 13 30.47	2.3874	20 38 17.6	12.409
20	9 15 53.51	2.3806	20 25 49.4	12.530
21	9 18 16.14	2.3738	20 13 14.0	12.649
22	9 20 38.37	2.3671	20 0 31.5	12.766
23	9 23 0.19	2.3603	N.19 47 42.1	12.881

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 25 21.61	2.3536	N.19 34 45.8	12.994
1	9 27 42.62	2.3469	19 21 42.8	13.106
2	9 30 3.23	2.3402	19 8 33.1	13.216
3	9 32 23.44	2.3335	18 55 16.9	13.323
4	9 34 43.25	2.3268	18 41 54.3	13.429
5	9 37 2.66	2.3202	18 28 25.4	13.532
6	9 39 21.68	2.3137	18 14 50.4	13.634
7	9 41 40.31	2.3072	18 1 9.3	13.735
8	9 43 58.54	2.3006	17 47 22.2	13.834
9	9 46 16.38	2.2941	17 33 29.2	13.931
10	9 48 33.83	2.2877	17 19 30.5	14.025
11	9 50 50.90	2.2812	17 5 26.2	14.118
12	9 53 7.58	2.2748	16 51 16.3	14.210
13	9 55 23.88	2.2686	16 37 1.0	14.298
14	9 57 39.81	2.2623	16 22 40.5	14.385
15	9 59 55.36	2.2561	16 8 14.8	14.471
16	10 2 10.54	2.2499	15 53 44.0	14.555
17	10 4 25.35	2.2438	15 39 8.2	14.637
18	10 6 39.80	2.2377	15 24 27.6	14.717
19	10 8 53.88	2.2317	15 9 42.2	14.795
20	10 11 7.61	2.2258	14 54 52.2	14.871
21	10 13 20.98	2.2199	14 39 57.7	14.945
22	10 15 34.00	2.2141	14 24 58.8	15.017
23	10 17 46.67	2.2083	14 9 55.6	15.089
24	10 19 58.99	2.2025	N.13 54 48.1	15.158

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 19 58.99	2.2025	N.13 54 48.1	15.158
1	10 22 10.97	2.1969	13 39 36.6	15.225
2	10 24 22.62	2.1913	13 24 21.1	15.291
3	10 26 33.93	2.1857	13 9 1.7	15.355
4	10 28 44.91	2.1803	12 53 38.5	15.417
5	10 30 55.57	2.1750	12 38 11.7	15.477
6	10 33 5.91	2.1697	12 22 41.3	15.535
7	10 35 15.93	2.1644	12 7 7.5	15.592
8	10 37 25.64	2.1592	11 51 30.3	15.647
9	10 39 35.03	2.1540	11 35 49.8	15.701
10	10 41 44.12	2.1490	11 20 6.2	15.752
11	10 43 52.91	2.1440	11 4 19.6	15.801
12	10 46 1.40	2.1391	10 48 30.1	15.848
13	10 48 9.60	2.1343	10 32 37.8	15.895
14	10 50 17.52	2.1296	10 16 42.7	15.940
15	10 52 25.15	2.1249	10 0 45.0	15.983
16	10 54 32.50	2.1202	9 44 44.8	16.024
17	10 56 39.58	2.1157	9 28 42.1	16.064
18	10 58 46.39	2.1112	9 12 37.1	16.102
19	11 0 52.93	2.1069	8 56 29.9	16.138
20	11 2 59.22	2.1027	8 40 20.6	16.172
21	11 5 5.25	2.0984	8 24 9.3	16.204
22	11 7 11.03	2.0942	8 7 56.1	16.236
23	11 9 16.56	2.0902	N. 7 51 41.0	16.266

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 11 21.85	2.0862	N. 7 35 24.2	16.293
1	11 13 26.90	2.0823	7 19 5.8	16.320
2	11 15 31.72	2.0785	7 2 45.8	16.345
3	11 17 36.32	2.0747	6 46 24.4	16.368
4	11 19 40.69	2.0710	6 30 1.7	16.389
5	11 21 44.84	2.0674	6 13 37.7	16.409
6	11 23 48.78	2.0639	5 57 12.6	16.427
7	11 25 52.51	2.0605	5 40 46.4	16.444
8	11 27 56.04	2.0571	5 24 19.3	16.459
9	11 29 59.37	2.0538	5 7 51.3	16.473
10	11 32 2.50	2.0507	4 51 22.5	16.486
11	11 34 5.45	2.0476	4 34 53.0	16.496
12	11 36 8.21	2.0445	4 18 23.0	16.504
13	11 38 10.79	2.0416	4 1 52.5	16.512
14	11 40 13.20	2.0387	3 45 21.6	16.518
15	11 42 15.43	2.0358	3 28 50.3	16.523
16	11 44 17.50	2.0331	3 12 18.8	16.527
17	11 46 19.41	2.0305	2 55 47.1	16.528
18	11 48 21.16	2.0279	2 39 15.4	16.528
19	11 50 22.76	2.0255	2 22 43.7	16.527
20	11 52 24.22	2.0232	2 6 12.1	16.524
21	11 54 25.54	2.0208	1 49 40.8	16.519
22	11 56 26.72	2.0186	1 33 9.8	16.514
23	11 58 27.77	2.0164	1 16 39.1	16.507
24	12 0 28.69	2.0143	N. 1 0 8.9	16.498

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 21.					FRIDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 0 28.69	2.0143	N. 1 0 8.9	16.498	0	13 36 12.77	2.0016	S. 11 37 10.3	14.589
1	12 2 29.49	2.0123	0 43 39.3	16.488	1	13 38 12.91	2.0030	11 51 43.6	14.522
2	12 4 30.17	2.0104	0 27 10.3	16.477	2	13 40 13.13	2.0043	12 6 12.9	14.453
3	12 6 30.74	2.0086	N. 0 10 42.0	16.465	3	13 42 13.43	2.0057	12 20 38.0	14.383
4	12 8 31.20	2.0068	S. 0 5 45.5	16.451	4	13 44 13.82	2.0073	12 34 58.9	14.311
5	12 10 31.56	2.0051	0 22 12.1	16.436	5	13 46 14.31	2.0089	12 49 15.4	14.238
6	12 12 31.82	2.0035	0 38 37.8	16.419	6	13 48 14.89	2.0105	13 3 27.5	14.165
7	12 14 31.98	2.0020	0 55 2.4	16.401	7	13 50 15.57	2.0122	13 17 35.2	14.092
8	12 16 32.06	2.0006	1 11 25.9	16.382	8	13 52 16.35	2.0139	13 31 38.5	14.017
9	12 18 32.05	1.9992	1 27 48.2	16.362	9	13 54 17.24	2.0157	13 45 37.2	13.940
10	12 20 31.96	1.9979	1 44 9.3	16.339	10	13 56 18.24	2.0176	13 59 31.3	13.863
11	12 22 31.80	1.9967	2 0 28.9	16.314	11	13 58 19.35	2.0194	14 13 20.8	13.786
12	12 24 31.57	1.9956	2 16 47.0	16.289	12	14 0 20.57	2.0213	14 27 5.6	13.707
13	12 26 31.27	1.9945	2 33 3.6	16.264	13	14 2 21.90	2.0233	14 40 45.6	13.627
14	12 28 30.91	1.9935	2 49 18.7	16.237	14	14 4 23.36	2.0253	14 54 20.8	13.546
15	12 30 30.49	1.9926	3 5 32.1	16.208	15	14 6 24.94	2.0273	15 7 51.1	13.463
16	12 32 30.02	1.9917	3 21 43.7	16.178	16	14 8 26.64	2.0294	15 21 16.4	13.380
17	12 34 29.50	1.9910	3 37 53.5	16.147	17	14 10 28.47	2.0316	15 34 36.7	13.296
18	12 36 28.94	1.9903	3 54 1.4	16.115	18	14 12 30.43	2.0338	15 47 51.9	13.211
19	12 38 28.34	1.9897	4 10 7.3	16.081	19	14 14 32.52	2.0360	16 1 2.0	13.126
20	12 40 27.71	1.9892	4 26 11.1	16.046	20	14 16 34.75	2.0382	16 14 7.0	13.039
21	12 42 27.04	1.9887	4 42 12.8	16.010	21	14 18 37.11	2.0405	16 27 6.7	12.951
22	12 44 26.35	1.9883	4 58 12.3	15.972	22	14 20 39.61	2.0428	16 40 1.1	12.863
23	12 46 25.64	1.9880	S. 5 14 9.5	15.933	23	14 22 42.25	2.0452	S. 16 52 50.2	12.774
	THURSDAY 22.					SATURDAY 24.			
0	12 48 24.91	1.9878	S. 5 30 4.3	15.893	0	14 24 45.04	2.0477	S. 17 5 34.0	12.684
1	12 50 24.17	1.9876	5 45 56.7	15.852	1	14 26 47.97	2.0501	17 18 12.3	12.592
2	12 52 23.42	1.9874	6 1 46.6	15.810	2	14 28 51.05	2.0526	17 30 45.1	12.500
3	12 54 22.66	1.9873	6 17 33.9	15.767	3	14 30 54.28	2.0551	17 43 12.3	12.407
4	12 56 21.90	1.9874	6 33 18.6	15.723	4	14 32 57.66	2.0577	17 55 33.9	12.313
5	12 58 21.15	1.9875	6 49 0.6	15.677	5	14 35 1.20	2.0602	18 7 49.8	12.218
6	13 0 20.40	1.9876	7 4 39.8	15.629	6	14 37 4.89	2.0628	18 20 0.1	12.123
7	13 2 19.66	1.9878	7 20 16.1	15.581	7	14 39 8.74	2.0655	18 32 4.6	12.027
8	13 4 18.94	1.9882	7 35 49.5	15.532	8	14 41 12.75	2.0682	18 44 3.3	11.929
9	13 6 18.25	1.9886	7 51 19.9	15.481	9	14 43 16.92	2.0708	18 55 56.1	11.831
10	13 8 17.58	1.9890	8 6 47.2	15.429	10	14 45 21.25	2.0735	19 7 43.0	11.732
11	13 10 16.93	1.9894	8 22 11.4	15.377	11	14 47 25.74	2.0762	19 19 23.9	11.632
12	13 12 16.31	1.9900	8 37 32.4	15.323	12	14 49 30.40	2.0790	19 30 58.8	11.532
13	13 14 15.73	1.9907	8 52 50.1	15.268	13	14 51 35.22	2.0818	19 42 27.7	11.430
14	13 16 15.19	1.9913	9 8 4.5	15.211	14	14 53 40.21	2.0846	19 53 50.4	11.327
15	13 18 14.69	1.9921	9 23 15.4	15.153	15	14 55 45.37	2.0874	20 5 6.9	11.223
16	13 20 14.24	1.9929	9 38 22.9	15.096	16	14 57 50.70	2.0902	20 16 17.2	11.120
17	13 22 13.84	1.9938	9 53 26.9	15.037	17	14 59 56.20	2.0931	20 27 21.3	11.016
18	13 24 13.50	1.9947	10 8 27.3	14.976	18	15 2 1.87	2.0959	20 38 19.1	10.910
19	13 26 13.21	1.9957	10 23 24.0	14.914	19	15 4 7.71	2.0988	20 49 10.5	10.803
20	13 28 12.99	1.9968	10 38 17.0	14.852	20	15 6 13.73	2.1017	20 59 55.5	10.697
21	13 30 12.83	1.9979	10 53 6.2	14.788	21	15 8 19.92	2.1046	21 10 34.1	10.589
22	13 32 12.74	1.9991	11 7 51.5	14.722	22	15 10 26.28	2.1075	21 21 6.2	10.480
23	13 34 12.72	2.0003	11 22 32.9	14.656	23	15 12 32.82	2.1104	21 31 31.7	10.370
24	13 36 12.77	2.0016	S. 11 37 10.3	14.589	24	15 14 39.53	2.1133	S. 21 41 50.6	10.260

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 14 39.53	2.1133	S.21 41 50.6	10.260
1	15 16 46.42	2.1162	21 52 2.9	10.149
2	15 18 53.48	2.1192	22 2 8.5	10.038
3	15 21 0.72	2.1222	22 12 7.4	9.926
4	15 23 8.14	2.1251	22 21 59.6	9.812
5	15 25 15.73	2.1280	22 31 44.9	9.698
6	15 27 23.50	2.1309	22 41 23.4	9.584
7	15 29 31.44	2.1338	22 50 55.0	9.468
8	15 31 39.56	2.1367	23 0 19.6	9.353
9	15 33 47.85	2.1397	23 9 37.3	9.237
10	15 35 56.32	2.1426	23 18 48.0	9.119
11	15 38 4.96	2.1455	23 27 51.6	9.000
12	15 40 13.78	2.1484	23 36 48.0	8.881
13	15 42 22.77	2.1513	23 45 37.3	8.762
14	15 44 31.93	2.1542	23 54 19.5	8.643
15	15 46 41.27	2.1571	24 2 54.5	8.522
16	15 48 50.78	2.1599	24 11 22.2	8.401
17	15 51 0.45	2.1626	24 19 42.6	8.279
18	15 53 10.29	2.1654	24 27 55.7	8.157
19	15 55 20.30	2.1683	24 36 1.4	8.033
20	15 57 30.48	2.1711	24 43 59.7	7.910
21	15 59 40.83	2.1738	24 51 50.6	7.786
22	16 1 51.34	2.1765	24 59 34.0	7.661
23	16 4 2.01	2.1792	S.25 7 9.9	7.536

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 6 12.84	2.1818	S.25 14 38.3	7.410
1	16 8 23.83	2.1845	25 21 59.1	7.283
2	16 10 34.98	2.1871	25 29 12.3	7.156
3	16 12 46.28	2.1896	25 36 17.8	7.028
4	16 14 57.73	2.1921	25 43 15.7	6.901
5	16 17 9.33	2.1947	25 50 5.9	6.772
6	16 19 21.09	2.1971	25 56 48.3	6.643
7	16 21 32.99	2.1995	26 3 23.0	6.513
8	16 23 45.03	2.2019	26 9 49.9	6.383
9	16 25 57.22	2.2043	26 16 8.9	6.252
10	16 28 9.55	2.2066	26 22 20.1	6.121
11	16 30 22.01	2.2088	26 28 23.4	5.990
12	16 32 34.61	2.2111	26 34 18.9	5.858
13	16 34 47.34	2.2133	26 40 6.4	5.725
14	16 37 0.20	2.2154	26 45 45.9	5.593
15	16 39 13.19	2.2175	26 51 17.5	5.460
16	16 41 26.30	2.2195	26 56 41.1	5.326
17	16 43 39.53	2.2215	27 1 56.6	5.192
18	16 45 52.88	2.2234	27 7 4.1	5.057
19	16 48 6.34	2.2253	27 12 3.5	4.922
20	16 50 19.91	2.2272	27 16 54.8	4.788
21	16 52 33.60	2.2290	27 21 38.1	4.653
22	16 54 47.39	2.2307	27 26 13.2	4.517
23	16 57 1.28	2.2324	27 30 40.1	4.380
24	16 59 15.27	2.2340	S.27 34 58.8	4.244

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 59 15.27	2.2340	S.27 34 58.8	4.244
1	17 1 29.36	2.2355	27 39 9.4	4.107
2	17 3 43.53	2.2369	27 43 11.7	3.970
3	17 5 57.79	2.2384	27 47 5.8	3.833
4	17 8 12.14	2.2397	27 50 51.7	3.696
5	17 10 26.56	2.2410	27 54 29.3	3.558
6	17 12 41.06	2.2423	27 57 58.6	3.419
7	17 14 55.64	2.2435	28 1 19.6	3.281
8	17 17 10.28	2.2446	28 4 32.4	3.144
9	17 19 24.99	2.2457	28 7 36.9	3.006
10	17 21 39.76	2.2466	28 10 33.1	2.867
11	17 23 54.58	2.2475	28 13 20.9	2.727
12	17 26 9.46	2.2484	28 16 0.4	2.588
13	17 28 24.39	2.2492	28 18 31.5	2.449
14	17 30 39.36	2.2499	28 20 54.3	2.310
15	17 32 54.37	2.2505	28 23 8.7	2.170
16	17 35 9.42	2.2511	28 25 14.7	2.031
17	17 37 24.50	2.2515	28 27 12.4	1.892
18	17 39 39.60	2.2519	28 29 1.7	1.752
19	17 41 54.73	2.2523	28 30 42.6	1.612
20	17 44 9.88	2.2527	28 32 15.1	1.472
21	17 46 25.05	2.2529	28 33 39.2	1.332
22	17 48 40.23	2.2530	28 34 54.9	1.192
23	17 50 55.41	2.2531	S.28 36 2.2	1.052

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 53 10.60	2.2531	S.28 37 1.1	0.912
1	17 55 25.78	2.2530	28 37 51.6	0.772
2	17 57 40.96	2.2529	28 38 33.7	0.633
3	17 59 56.13	2.2527	28 39 7.5	0.493
4	18 2 11.29	2.2524	28 39 32.9	0.353
5	18 4 26.42	2.2520	28 39 49.8	0.212
6	18 6 41.53	2.2516	28 39 58.3	− 0.072
7	18 8 56.61	2.2511	28 39 58.5	+ 0.067
8	18 11 11.66	2.2505	28 39 50.3	0.207
9	18 13 26.67	2.2499	28 39 33.7	0.346
10	18 15 41.64	2.2492	28 39 8.8	0.485
11	18 17 56.57	2.2484	28 38 35.5	0.625
12	18 20 11.45	2.2476	28 37 53.8	0.764
13	18 22 26.28	2.2467	28 37 3.8	0.902
14	18 24 41.05	2.2456	28 36 5.5	1.041
15	18 26 55.75	2.2445	28 34 58.9	1.179
16	18 29 10.39	2.2434	28 33 44.0	1.317
17	18 31 24.96	2.2422	28 32 20.8	1.456
18	18 33 39.45	2.2409	28 30 49.3	1.594
19	18 35 53.86	2.2395	28 29 9.5	1.732
20	18 38 8.19	2.2382	28 27 21.5	1.869
21	18 40 22.44	2.2368	28 25 25.3	2.006
22	18 42 36.60	2.2352	28 23 20.8	2.143
23	18 44 50.66	2.2336	28 21 8.1	2.279
24	18 47 4.63	2.2320	S.28 18 47.3	2.415

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 29.			
	h m s	s	° ′ ″	″
0	18 47 4.63	2.2320	S.28 18 47.3	2.415
1	18 49 18.50	2.2302	28 16 18.3	2.552
2	18 51 32.26	2.2283	28 13 41.1	2.687
3	18 53 45.90	2.2264	28 10 55.8	2.822
4	18 55 59.43	2.2246	28 8 2.4	2.957
5	18 58 12.85	2.2226	28 5 0.9	3.092
6	19 0 26.15	2.2206	28 1 51.4	3.226
7	19 2 39.32	2.2185	27 58 33.8	3.360
8	19 4 52.37	2.2164	27 55 8.2	3.493
9	19 7 5.29	2.2142	27 51 34.6	3.627
10	19 9 18.08	2.2120	27 47 53.0	3.760
11	19 11 30.73	2.2097	27 44 3.4	3.892
12	19 13 43.24	2.2073	27 40 5.9	4.024
13	19 15 55.61	2.2049	27 36 0.5	4.156
14	19 18 7.83	2.2024	27 31 47.2	4.287
15	19 20 19.90	2.1999	27 27 26.1	4.418
16	19 22 31.82	2.1974	27 22 57.1	4.548
17	19 24 43.59	2.1948	27 18 20.3	4.678
18	19 26 55.20	2.1922	27 13 35.8	4.807
19	19 29 6.65	2.1895	27 8 43.5	4.936
20	19 31 17.94	2.1867	27 3 43.5	5.063
21	19 33 29.06	2.1839	26 58 35.9	5.191
22	19 35 40.01	2.1812	26 53 20.6	5.318
23	19 37 50.80	2.1784	S.26 47 57.7	5.446
	FRIDAY 30.			
0	19 40 1.42	2.1755	S.26 42 27.1	5.572
1	19 42 11.86	2.1725	26 36 49.0	5.697
2	19 44 22.12	2.1696	26 31 3.4	5.822
3	19 46 32.21	2.1666	26 25 10.3	5.947
4	19 48 42.12	2.1636	26 19 9.7	6.072
5	19 50 51.84	2.1605	26 13 1.7	6.195
6	19 53 1.38	2.1574	26 6 46.3	6.318
7	19 55 10.73	2.1543	26 0 23.6	6.440
8	19 57 19.90	2.1512	25 53 53.5	6.562
9	19 59 28.88	2.1481	25 47 16.1	6.683
10	20 1 37.67	2.1449	25 40 31.5	6.804
11	20 3 46.27	2.1417	25 33 39.6	6.925
12	20 5 54.67	2.1384	25 26 40.5	7.044
13	20 8 2.88	2.1352	25 19 34.3	7.163
14	20 10 10.90	2.1320	25 12 21.0	7.282
15	20 12 18.72	2.1287	25 5 0.5	7.400
16	20 14 26.34	2.1254	24 57 33.0	7.517
17	20 16 33.76	2.1221	24 49 58.5	7.633
18	20 18 40.99	2.1188	24 42 17.1	7.748
19	20 20 48.02	2.1154	24 34 28.7	7.864
20	20 22 54.84	2.1120	24 26 33.4	7.978
21	20 25 1.46	2.1087	24 18 31.3	8.092
22	20 27 7.89	2.1054	24 10 22.4	8.205
23	20 29 14.11	2.1020	24 2 6.7	8.317
24	20 31 20.13	2.0987	S.23 53 44.3	8.429

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 31.			
	h m s	s	° ′ ″	″
0	20 31 20.13	2.0987	S.23 53 44.3	8.429
1	20 33 25.95	2.0953	23 45 15.2	8.541
2	20 35 31.57	2.0919	23 36 39.4	8.652
3	20 37 36.98	2.0885	23 27 57.0	8.761
4	20 39 42.19	2.0852	23 19 8.1	8.870
5	20 41 47.21	2.0819	23 10 12.6	8.979
6	20 43 52.02	2.0785	23 1 10.6	9.087
7	20 45 56.63	2.0752	22 52 2.2	9.194
8	20 48 1.04	2.0718	22 42 47.4	9.301
9	20 50 5.25	2.0685	22 33 26.1	9.407
10	20 52 9.26	2.0652	22 23 58.5	9.512
11	20 54 13.07	2.0619	22 14 24.7	9.616
12	20 56 16.69	2.0586	22 4 44.6	9.720
13	20 58 20.11	2.0553	21 54 58.3	9.822
14	21 0 23.33	2.0520	21 45 5.9	9.924
15	21 2 26.35	2.0487	21 35 7.4	10.026
16	21 4 29.18	2.0455	21 25 2.8	10.127
17	21 6 31.81	2.0422	21 14 52.2	10.227
18	21 8 34.25	2.0390	21 4 35.5	10.327
19	21 10 36.49	2.0358	20 54 12.9	10.426
20	21 12 38.55	2.0327	20 43 44.4	10.523
21	21 14 40.42	2.0296	20 33 10.1	10.620
22	21 16 42.10	2.0264	20 22 30.0	10.717
23	21 18 43.59	2.0233	S.20 11 44.1	10.812
	SUNDAY, APRIL 1.			
0	21 20 44.90	2.0203	S.20 0 52.5	10.907

PHASES OF THE MOON.

		d	h	m
● New Moon	March	7	2	18.5
☽ First Quarter		14	6	28.1
○ Full Moon		21	2	11.1
☾ Last Quarter		28	20	27.8

		d	h
☾ Apogee	March	1	4.1
☾ Perigee		16	17.3
☾ Apogee		29	0.7

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Saturn	W.	68° 19′ 19″	3074	69° 48′ 0″	3074	71° 16′ 41″	3073	72° 45′ 24″	3071
	Antares	W.	24 7 30	3079	25 36 5	3079	27 4 40	3078	28 33 17	3077
	Venus	E.	50 12 33	3129	48 44 59	3138	47 17 36	3147	45 50 23	3157
	Sun	E.	68 31 10	3469	67 10 11	3468	65 49 11	3467	64 28 10	3465
2	Saturn	W.	80 9 42	3056	81 38 46	3052	83 7 55	3047	84 37 10	3043
	Antares	W.	35 56 59	3062	37 25 55	3058	38 54 56	3054	40 24 2	3049
	Venus	E.	38 37 22	3214	37 11 29	3230	35 45 55	3247	34 20 41	3267
	Sun	E.	57 42 24	3449	56 21 3	3446	54 59 38	3440	53 38 7	3436
3	Saturn	W.	92 5 2	3013	93 34 59	3005	95 5 5	2998	96 35 20	2991
	Antares	W.	47 51 12	3019	49 21 1	3013	50 50 58	3005	52 21 4	2998
	Sun	E.	46 48 58	3404	45 26 46	3397	44 4 26	3389	42 41 57	3382
4	Antares	W.	59 53 58	2958	61 25 4	2949	62 56 21	2939	64 27 50	2931
	Mars	W.	25 33 0	3292	26 57 21	3276	28 22 1	3260	29 46 59	3246
	Sun	E.	35 47 15	3339	34 23 49	3330	33 0 12	3320	31 36 24	3312
5	Antares	W.	72 8 13	2882	73 40 55	2872	75 13 50	2862	76 46 58	2852
	Mars	W.	36 56 4	3176	38 22 42	3163	39 49 35	3150	41 16 44	3138
	Sun	E.	24 34 44	3265	23 9 52	3256	21 44 49	3248	20 19 37	3240
8	Sun	W.	10 49 9	3051	12 18 19	3026	13 47 59	3006	15 18 4	2988
	Jupiter	E.	56 57 4	2706	55 20 32	2697	53 43 48	2689	52 6 53	2680
	Aldebaran	E.	69 36 26	2711	68 0 1	2704	66 23 27	2697	64 46 43	2689
9	Sun	W.	22 53 30	2920	24 25 24	2908	25 57 33	2898	27 29 55	2887
	Jupiter	E.	43 59 34	2643	42 21 37	2635	40 43 30	2629	39 5 15	2623
	Aldebaran	E.	56 40 49	2660	55 3 16	2656	53 25 37	2652	51 47 52	2649
	Pollux	E.	99 51 23	2566	98 11 41	2557	96 31 47	2548	94 51 41	2540
10	Sun	W.	35 14 56	2840	36 48 32	2831	38 22 19	2823	39 56 17	2815
	Aldebaran	E.	43 38 22	2644	42 0 27	2646	40 22 35	2650	38 44 48	2655
	Pollux	E.	86 28 26	2502	84 47 15	2494	83 5 53	2487	81 24 21	2480
11	Sun	W.	47 48 43	2775	49 23 43	2769	50 58 52	2762	52 34 10	2754
	Pollux	E.	72 54 13	2445	71 11 43	2438	69 29 3	2432	67 46 14	2426
	Regulus	E.	109 38 12	2450	107 55 49	2444	106 13 17	2437	104 30 35	2431
12	Sun	W.	60 33 0	2721	62 9 12	2714	63 45 33	2708	65 22 2	2702
	Pollux	E.	59 10 1	2396	57 26 21	2391	55 42 33	2385	53 58 37	2380
	Regulus	E.	95 54 53	2401	94 11 19	2394	92 27 36	2389	90 43 46	2382
13	Sun	W.	73 26 27	2672	75 3 44	2667	76 41 8	2662	78 18 39	2656
	α Arietis	W.	30 23 50	2497	32 5 7	2480	33 46 49	2463	35 28 54	2448
	Pollux	E.	45 17 0	2354	43 32 19	2348	41 47 30	2344	40 2 34	2339
	Regulus	E.	82 2 35	2357	80 17 58	2352	78 33 14	2347	76 48 23	2342
14	Sun	W.	86 28 5	2630	88 6 19	2626	89 44 39	2621	91 23 6	2616
	α Arietis	W.	44 4 7	2390	45 47 56	2381	47 31 58	2373	49 16 11	2365
	Jupiter	W.	24 24 4	2436	26 6 47	2422	27 49 50	2411	29 33 9	2401
	Regulus	E.	68 2 22	2319	66 16 5[illegible]	2315	64 31 12	2311	62 45 28	2307

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Saturn**	W.	74° 14′ 9″	3069	75° 42′ 57″	3066	77° 11′ 48″	3063	78° 40′ 43″	3060
	Antares	W.	30 1 55	3074	31 30 36	3072	32 59 20	3069	34 28 7	3065
	Venus	E.	44 23 22	3166	42 56 32	3177	41 29 55	3188	40 3 31	3200
	Sun	E.	63 7 7	3463	61 46 1	3460	60 24 52	3457	59 3 40	3454
2	**Saturn**	W.	86 6 30	3037	87 35 57	3031	89 5 31	3025	90 35 13	3019
	Antares	W.	41 53 14	3044	43 22 32	3038	44 51 58	3032	46 21 31	3026
	Venus	E.	32 55 51	3289	31 31 27	3316	30 7 34	3346	28 44 16	3382
	Sun	E.	52 16 31	3430	50 54 48	3424	49 32 59	3417	48 11 2	3411
3	**Saturn**	W.	98 5 44	2984	99 36 17	2976	101 7 0	2968	102 37 53	2959
	Antares	W.	53 51 19	2990	55 21 44	2983	56 52 18	2974	58 23 3	2966
	Sun	E.	41 19 20	3373	39 56 33	3365	38 33 37	3357	37 10 31	3348
4	Antares	W.	65 59 30	2921	67 31 22	2911	69 3 27	2901	70 35 44	2892
	Mars	W.	31 12 14	3231	32 37 47	3217	34 3 36	3203	35 29 42	3189
	Sun	E.	30 12 26	3302	28 48 17	3293	27 23 57	3283	25 59 26	3274
5	Antares	W.	78 20 19	2842	79 53 53	2831	81 27 41	2820	83 1 43	2810
	Mars	W.	42 44 8	3124	44 11 48	3112	45 39 43	3100	47 7 53	3087
	Sun	E.	18 54 15	3232	17 28 44	3225	16 3 5	3220	14 37 19	3214
8	**Sun**	W.	16 48 32	2972	18 19 20	2957	19 50 27	2943	21 21 51	2931
	Jupiter	E.	50 29 46	2672	48 52 28	2664	47 15 0	2657	45 37 22	2649
	Aldebaran	E.	63 9 49	2683	61 32 46	2677	59 55 35	2670	58 18 15	2666
9	**Sun**	W.	29 2 30	2877	30 35 18	2867	32 8 19	2858	33 41 32	2849
	Jupiter	E.	37 26 51	2618	35 48 20	2613	34 9 43	2609	32 31 0	2605
	Aldebaran	E.	50 10 3	2646	48 32 10	2644	46 54 15	2643	45 16 18	2643
	Pollux	E.	93 11 24	2533	91 30 56	2525	89 50 17	2517	88 9 27	2509
10	**Sun**	W.	41 30 25	2807	43 4 44	2796	44 39 14	2792	46 13 53	2783
	Aldebaran	E.	37 7 8	2663	35 29 38	2672	33 52 21	2685	32 15 21	2702
	Pollux	E.	79 42 39	2472	78 0 47	2465	76 18 45	2459	74 36 31	2452
11	**Sun**	W.	54 9 38	2747	55 45 15	2741	57 21 1	2734	58 56 56	2727
	Pollux	E.	66 3 17	2420	64 20 11	2414	62 36 56	2408	60 53 33	2402
	Regulus	E.	102 47 44	2424	101 4 44	2419	99 21 36	2412	97 38 19	2406
12	**Sun**	W.	66 58 39	2696	68 35 24	2690	70 12 17	2684	71 49 18	2678
	Pollux	E.	52 14 33	2374	50 30 21	2368	48 46 1	2364	47 1 34	2359
	Regulus	E.	88 59 47	2378	87 15 40	2373	85 31 26	2367	83 47 4	2362
13	**Sun**	W.	79 56 18	2651	81 34 4	2646	83 11 57	2640	84 49 58	2635
	α Arietis	W.	37 11 21	2434	38 54 7	2422	40 37 11	2410	42 20 31	2399
	Pollux	E.	38 17 32	2335	36 32 23	2330	34 47 7	2326	33 1 45	2322
	Regulus	E.	75 3 24	2337	73 18 18	2333	71 33 6	2328	69 47 47	2324
14	**Sun**	W.	93 1 39	2612	94 40 18	2607	96 19 3	2603	97 57 54	2599
	α Arietis	W.	51 0 36	2358	52 45 11	2350	54 29 57	2344	56 14 52	2338
	Jupiter	W.	31 16 43	2391	33 0 30	2384	34 44 28	2376	36 28 37	2369
	Regulus	E.	60 59 39	2303	59 13 44	2299	57 27 43	2296	55 41 37	2292

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
15	SUN	W.	99° 36′ 51″	2595	101° 15′ 53″	2591	102° 55′ 1″	2588	104° 34′ 13″	2584
	α Arietis	W.	57 59 56	2332	59 45 9	2327	61 30 29	2322	63 15 57	2317
	JUPITER	W.	38 12 56	2363	39 57 24	2357	41 42 0	2352	43 26 44	2347
	Aldebaran	W.	28 19 9	2571	29 58 44	2537	31 39 6	2508	33 20 8	2484
	Regulus	E.	53 55 26	2289	52 9 10	2286	50 22 50	2283	48 36 26	2281
	SATURN	E.	108 51 45	2272	107 5 4	2268	105 18 17	2264	103 31 25	2262
16	α Arietis	W.	72 4 48	2299	73 50 49	2296	75 36 55	2294	77 23 4	2291
	JUPITER	W.	52 12 0	2326	53 57 19	2325	55 42 42	2322	57 28 9	2320
	Aldebaran	W.	41 52 32	2401	43 36 5	2389	45 19 55	2380	47 3 59	2371
	Regulus	E.	39 43 36	2272	37 56 56	2271	36 10 14	2270	34 23 31	2271
	Spica	E.	93 40 49	2256	91 53 45	2255	90 6 39	2253	88 19 30	2251
	SATURN	E.	94 35 58	2247	92 48 40	2245	91 1 20	2243	89 13 57	2242
17	JUPITER	W.	66 16 5	2313	68 1 45	2313	69 47 25	2113	71 33 6	2113
	Aldebaran	W.	55 46 59	2341	57 31 59	2337	59 17 5	2334	61 2 15	2331
	Spica	E.	79 23 17	2247	77 35 59	2247	75 48 41	2247	74 1 24	2247
	SATURN	E.	80 16 33	2237	78 29 1	2238	76 41 30	2238	74 53 59	2239
18	JUPITER	W.	80 21 10	2321	82 6 39	2323	83 52 5	2326	85 37 27	2329
	Aldebaran	W.	69 48 41	2328	71 33 59	2330	73 19 15	2331	75 4 29	2333
	Pollux	W.	25 46 40	2262	27 33 36	2264	29 20 28	2266	31 7 17	2269
	Spica	E.	65 5 19	2256	63 18 14	2258	61 31 13	2261	59 44 16	2264
	SATURN	E.	65 56 49	2247	64 9 32	2250	62 22 19	2253	60 35 11	2256
19	Aldebaran	W.	83 49 38	2352	85 34 22	2357	87 18 59	2362	89 3 28	2368
	Pollux	W.	40 0 10	2289	41 46 26	2294	43 32 34	2300	45 18 34	2307
	Spica	E.	50 50 56	2286	49 4 36	2292	47 18 25	2298	45 32 22	2304
	SATURN	E.	51 41 7	2283	49 54 42	2289	48 8 26	2296	46 22 20	2303
	Antares	E.	96 44 18	2286	94 57 58	2291	93 11 45	2297	91 25 41	2303
20	Pollux	W.	54 6 6	2342	55 51 4	2351	57 35 49	2360	59 20 21	2369
	Spica	E.	36 44 41	2342	34 59 43	2350	33 14 57	2360	31 30 25	2369
	SATURN	E.	37 34 48	2348	35 49 59	2359	34 5 26	2371	32 21 10	2384
	Antares	E.	82 37 49	2340	80 52 48	2349	79 8 0	2357	77 23 24	2367
21	Pollux	W.	67 59 34	2420	69 42 40	2431	71 25 30	2443	73 8 3	2455
	Regulus	W.	31 20 58	2441	33 3 35	2450	34 45 59	2460	36 28 8	2470
	Antares	E.	68 43 58	2419	67 0 50	2430	65 17 58	2442	63 35 23	2453
22	Pollux	W.	81 36 33	2517	83 17 22	2531	84 57 52	2544	86 38 4	2558
	Regulus	W.	44 55 6	2528	46 35 40	2541	48 15 56	2553	49 55 55	2566
	Antares	E.	55 6 42	2516	53 25 51	2530	51 45 19	2543	50 5 5	2556
23	Regulus	W.	58 11 16	2635	59 49 24	2648	61 27 14	2663	63 4 44	2676
	Antares	E.	41 48 40	2626	40 10 20	2640	38 32 20	2655	36 54 39	2669
	MARS	E.	89 57 58	2878	88 25 11	2894	86 52 44	2909	85 20 36	2924
	α Aquilæ	E.	94 0 2	3456	92 38 49	3469	91 17 50	3481	89 57 5	3496
24	Regulus	W.	71 7 34	2747	72 43 12	2760	74 18 32	2775	75 53 33	2788
	MARS	E.	77 44 41	2999	76 14 27	3014	74 44 31	3028	73 14 53	3043
	α Aquilæ	E.	83 17 42	3584	81 58 50	3604	80 40 20	3626	79 22 14	3649

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
15	SUN	W.	106° 13′ 30″	2581	107° 52′ 51″	2577	109° 32′ 17″	2574	111° 11′ 47″	2572
	α Arietis	W.	65 1 31	2313	66 47 12	2309	68 32 59	2305	70 18 51	2302
	JUPITER	W.	45 11 35	2343	46 56 32	2338	48 41 36	2335	50 26 45	2331
	Aldebaran	W.	35 1 44	2462	36 43 50	2444	38 26 22	2428	40 9 17	2414
	Regulus	E.	46 49 58	2279	45 3 27	2276	43 16 52	2274	41 30 15	2273
	SATURN	E.	101 44 29	2258	99 57 28	2255	98 10 22	2252	96 23 12	2249
16	α Arietis	W.	79 9 17	2289	80 55 32	2287	82 41 50	2287	84 28 9	2285
	JUPITER	W.	59 13 40	2318	60 59 13	2316	62 44 49	2315	64 30 26	2314
	Aldebaran	W.	48 48 15	2364	50 32 42	2356	52 17 20	2350	54 2 6	2346
	Regulus	E.	32 36 49	2271	30 50 7	2273	29 3 28	2275	27 16 52	2279
	Spica	E.	86 32 19	2250	84 45 6	2249	82 57 51	2247	81 10 34	2247
	SATURN	E.	87 26 32	2240	85 39 4	2239	83 51 35	2238	82 4 4	2238
17	JUPITER	W.	73 18 46	2314	75 4 25	2315	76 50 2	2317	78 35 37	2318
	Aldebaran	W.	62 47 29	2330	64 32 45	2328	66 18 3	2328	68 3 22	2328
	Spica	E.	72 14 7	2249	70 26 52	2249	68 39 38	2251	66 52 27	2253
	SATURN	E.	73 6 29	2239	71 19 0	2241	69 31 34	2243	67 44 10	2245
18	JUPITER	W.	87 22 44	2333	89 7 56	2337	90 53 1	2342	92 38 0	2347
	Aldebaran	W.	76 49 40	2336	78 34 47	2339	80 19 50	2343	82 4 47	2347
	Pollux	W.	32 54 2	2272	34 40 43	2276	36 27 18	2280	38 13 47	2284
	Spica	E.	57 57 24	2268	56 10 37	2272	54 23 57	2277	52 37 23	2281
	SATURN	E.	58 48 9	2262	57 1 13	2266	55 14 23	2271	53 27 41	2277
19	Aldebaran	W.	90 47 48	2375	92 31 58	2382	94 15 58	2391	95 59 46	2398
	Pollux	W.	47 4 24	2313	48 50 5	2320	50 35 36	2326	52 20 57	2335
	Spica	E.	43 46 29	2311	42 0 46	2318	40 15 13	2326	38 29 51	2334
	SATURN	E.	44 36 25	2311	42 50 41	2320	41 5 10	2328	39 19 52	2338
	Antares	E.	89 39 46	2310	87 54 1	2317	86 8 26	2324	84 23 2	2332
20	Pollux	W.	61 4 40	2379	62 48 45	2389	64 32 36	2399	66 16 12	2409
	Spica	E.	29 46 6	2380	28 2 2	2389	26 18 12	2401	24 34 38	2411
	SATURN	E.	30 37 12	2397	28 53 33	2412	27 10 16	2429	25 27 22	2446
	Antares	E.	75 39 2	2377	73 54 54	2387	72 11 0	2397	70 27 21	2408
21	Pollux	W.	74 50 20	2467	76 32 20	2480	78 14 2	2492	79 55 26	2504
	Regulus	W.	38 10 3	2481	39 51 43	2492	41 33 7	2504	43 14 15	2516
	Antares	E.	61 53 4	2465	60 11 2	2478	58 29 18	2490	56 47 51	2503
22	Pollux	W.	88 17 57	2572	89 57 31	2585	91 36 46	2599	93 15 42	2613
	Regulus	W.	51 35 36	2580	53 14 59	2593	54 54 3	2607	56 32 49	2621
	Antares	E.	48 25 10	2570	46 45 34	2584	45 6 17	2598	43 27 19	2612
23	Regulus	W.	64 41 56	2691	66 18 48	2704	67 55 22	2719	69 31 37	2732
	Antares	E.	35 17 17	2684	33 40 15	2697	32 3 31	2711	30 27 6	2725
	MARS	E.	83 48 47	2939	82 17 17	2954	80 46 6	2969	79 15 14	2984
	α Aquilæ	E.	88 36 36	3511	87 16 24	3527	85 56 30	3545	84 36 56	3564
24	Regulus	W.	77 28 17	2801	79 2 43	2815	80 36 52	2828	82 10 43	2841
	MARS	E.	71 45 34	3058	70 16 33	3072	68 47 49	3087	67 19 23	3101
	α Aquilæ	E.	78 4 32	3673	76 47 16	3697	75 30 26	3724	74 14 4	3751

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
25	Regulus	W.	83° 44′ 18″	2854	85° 17′ 36″	2867	86° 50′ 37″	2879	88° 23′ 23″	2891
	Spica	W.	29 41 25	2850	31 14 48	2862	32 47 55	2875	34 20 46	2887
	SATURN	W.	29 35 33	2863	31 8 39	2873	32 41 33	2882	34 14 15	2892
	MARS	E.	65 51 15	3114	64 23 23	3129	62 55 48	3142	61 28 29	3156
	α Aquilæ	E.	72 58 11	3780	71 42 48	3809	70 27 55	3840	69 13 34	3872
	VENUS	E.	92 50 34	3077	91 21 56	3091	89 53 35	3104	88 25 30	3118
	Fomalhaut	E.	98 18 8	3065	96 49 16	3077	95 20 38	3088	93 52 14	3099
	SUN	E.	132 40 10	3206	131 14 8	3220	129 48 23	3233	128 22 53	3247
26	Regulus	W.	96 3 25	2948	97 34 43	2958	99 5 48	2968	100 36 41	2978
	Spica	W.	42 1 18	2943	43 32 42	2953	45 3 54	2963	46 34 53	2973
	SATURN	W.	41 54 43	2939	43 26 13	2947	44 57 32	2957	46 28 39	2965
	MARS	E.	54 15 49	3218	52 50 1	3229	51 24 26	3241	49 59 5	3251
	α Aquilæ	E.	63 10 32	4059	61 59 50	4101	60 49 49	4145	59 40 31	4193
	VENUS	E.	81 9 5	3180	79 42 32	3193	78 16 14	3204	76 50 9	3215
	Fomalhaut	E.	86 33 41	3157	85 6 40	3168	83 39 52	3179	82 13 18	3190
	SUN	E.	121 19 10	3307	119 55 7	3319	118 31 18	3330	117 7 41	3340
27	Regulus	W.	108 8 11	3021	109 37 58	3028	111 7 36	3034	112 37 6	3042
	Spica	W.	54 6 58	3015	55 36 52	3022	57 6 38	3029	58 36 15	3034
	SATURN	W.	54 1 43	3003	55 31 52	3009	57 1 53	3015	58 31 47	3022
	MARS	E.	42 55 21	3300	41 31 10	3310	40 7 10	3318	38 43 19	3326
	α Aquilæ	E.	54 5 58	4474	53 1 43	4540	51 58 26	4611	50 56 11	4689
	VENUS	E.	69 42 54	3265	68 18 1	3274	66 53 19	3282	65 28 46	3290
	Fomalhaut	E.	75 3 44	3245	73 38 28	3256	72 13 25	3266	70 48 34	3277
	SUN	E.	110 12 26	3386	108 49 53	3393	107 27 29	3401	106 5 14	3408
28	Spica	W.	66 2 38	3059	67 31 38	3063	69 0 33	3066	70 29 24	3068
	SATURN	W.	65 59 36	3044	67 28 54	3047	68 58 9	3050	70 27 20	3052
	Antares	W.	20 8 41	3059	21 37 41	3062	23 6 37	3065	24 35 30	3068
	MARS	E.	31 46 23	3364	30 23 25	3371	29 0 35	3378	27 37 53	3385
	VENUS	E.	58 28 15	3325	57 4 32	3330	55 40 55	3335	54 17 24	3340
	Fomalhaut	E.	63 47 27	3331	62 23 51	3341	61 0 27	3352	59 37 16	3365
	SUN	E.	99 15 41	3434	97 54 3	3438	96 32 30	3441	95 11 0	3444
29	Spica	W.	77 53 9	3073	79 21 51	3073	80 50 34	3072	82 19 18	3070
	SATURN	W.	77 52 45	3056	79 21 48	3056	80 50 52	3054	82 19 58	3053
	Antares	W.	31 59 17	3073	33 28 0	3072	34 56 44	3071	36 25 29	3070
	VENUS	E.	47 21 4	3358	45 58 0	3360	44 34 58	3363	43 11 59	3365
	Fomalhaut	E.	52 44 47	3427	51 23 1	3441	50 1 31	3457	48 40 19	3473
	SUN	E.	88 24 4	3449	87 2 43	3449	85 41 22	3447	84 19 59	3446
30	SATURN	W.	89 46 4	3039	91 15 29	3034	92 45 0	3029	94 14 37	3024
	Spica	W.	89 43 38	3056	91 12 42	3052	92 41 51	3047	94 11 6	3042
	Antares	W.	43 49 52	3056	45 18 56	3051	46 48 6	3046	48 17 22	3041
	VENUS	E.	36 17 38	3373	34 54 51	3376	33 32 7	3378	32 9 25	3380
	Fomalhaut	E.	41 59 25	3580	40 40 29	3609	39 22 4	3640	38 4 13	3677
	SUN	E.	77 32 28	3431	76 10 46	3425	74 48 58	3420	73 27 4	3415
31	SATURN	W.	101 44 28	2992	103 14 51	2984	104 45 24	2976	106 16 7	2967
	Antares	W.	55 45 29	3008	57 15 32	3000	58 45 45	2992	60 16 8	2983
	SUN	E.	66 35 47	3379	65 13 6	3370	63 50 15	3361	62 27 14	3351

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
25	Regulus	W.	89° 55′ 53″	2903	91° 28′ 8″	2915	93° 0′ 8″	2926	94° 31′ 54″	2938
	Spica	W.	35 53 22	2898	37 25 43	2910	38 57 49	2922	40 29 40	2932
	Saturn	W.	35 46 44	2901	37 19 1	2910	38 51 7	2920	40 23 1	2929
	Mars	E.	60 1 27	3168	58 34 40	3181	57 8 8	3193	55 41 51	3206
	α Aquilæ	E.	67 59 46	3907	66 46 33	3941	65 33 55	3978	64 21 54	4018
	Venus	E.	86 57 42	3131	85 30 10	3143	84 2 53	3157	82 35 52	3168
	Fomalhaut	E.	92 24 3	3111	90 56 7	3122	89 28 24	3134	88 0 56	3145
	Sun	E.	126 57 39	3259	125 32 40	3272	124 7 56	3284	122 43 26	3296
26	Regulus	W.	102 7 21	2987	103 37 50	2997	105 8 7	3005	106 38 14	3013
	Spica	W.	48 5 40	2982	49 36 15	2990	51 6 40	2999	52 36 54	3007
	Saturn	W.	47 59 36	2973	49 30 23	2981	51 0 59	2989	52 31 26	2997
	Mars	E.	48 33 56	3361	47 8 59	3372	45 44 15	3382	44 19 42	3392
	α Aquilæ	E.	58 31 58	4243	57 24 12	4295	56 17 15	4352	55 11 10	4410
	Venus	E.	75 24 18	3225	73 58 39	3236	72 33 12	3246	71 7 57	3256
	Fomalhaut	E.	80 46 57	3201	79 20 49	3212	77 54 54	3224	76 29 13	3234
	Sun	E.	115 44 16	3350	114 21 2	3360	112 58 0	3369	111 35 8	3378
27	Regulus	W.	114 6 27	3047	115 35 41	3053	117 4 48	3058	118 33 49	3063
	Spica	W.	60 5 45	3040	61 35 8	3046	63 4 24	3051	64 33 34	3056
	Saturn	W.	60 1 33	3026	61 31 13	3032	63 0 46	3036	64 30 14	3041
	Mars	E.	37 19 38	3334	35 56 6	3342	34 32 43	3350	33 9 29	3357
	α Aquilæ	E.	49 55 2	4770	48 55 1	4858	47 56 12	4952	46 58 39	5055
	Venus	E.	64 4 23	3298	62 40 9	3305	61 16 3	3312	59 52 5	3319
	Fomalhaut	E.	69 23 56	3288	67 59 30	3299	66 35 17	3309	65 11 16	3319
	Sun	E.	104 43 6	3414	103 21 5	3420	101 59 11	3425	100 37 23	3431
28	Spica	W.	71 58 13	3070	73 26 59	3071	74 55 44	3073	76 24 27	3073
	Saturn	W.	71 56 28	3054	73 25 34	3055	74 54 39	3056	76 23 42	3056
	Antares	W.	26 4 19	3069	27 33 6	3071	29 1 51	3073	30 30 34	3073
	Mars	E.	26 15 19	3393	24 52 54	3400	23 30 37	3408	22 8 29	3416
	Venus	E.	52 53 59	3345	51 30 39	3348	50 7 23	3352	48 44 12	3355
	Fomalhaut	E.	58 14 19	3376	56 51 35	3388	55 29 5	3400	54 6 49	3413
	Sun	E.	93 49 33	3446	92 28 9	3447	91 6 46	3449	89 45 25	3449
29	Spica	W.	83 48 4	3069	85 16 52	3065	86 45 44	3063	88 14 39	3060
	Saturn	W.	83 49 5	3051	85 18 15	3049	86 47 27	3046	88 16 43	3042
	Antares	W.	37 54 15	3068	39 23 4	3065	40 51 56	3062	42 20 52	3059
	Venus	E.	41 49 3	3367	40 26 9	3369	39 3 17	3371	37 40 27	3372
	Fomalhaut	E.	47 19 25	3491	45 58 51	3510	44 38 38	3532	43 18 49	3555
	Sun	E.	82 58 35	3445	81 37 9	3441	80 15 39	3438	78 54 6	3434
30	Saturn	W.	95 44 20	3018	97 14 10	3012	98 44 8	3005	100 14 14	2999
	Spica	W.	95 40 27	3035	97 9 56	3030	98 39 32	3023	100 9 16	3016
	Antares	W.	49 46 44	3035	51 16 13	3029	52 45 50	3022	54 15 35	3015
	Venus	E.	30 46 46	3383	29 24 10	3387	28 1 39	3392	26 39 13	3399
	Fomalhaut	E.	36 47 1	3717	35 30 32	3762	34 14 50	3814	33 0 2	3874
	Sun	E.	72 5 4	3408	70 42 57	3401	69 20 42	3394	67 58 19	3386
31	Saturn	W.	107 47 1	2958	109 18 6	2950	110 49 22	2940	112 20 50	2930
	Antares	W.	61 46 42	2974	63 17 27	2965	64 48 24	2955	66 19 33	2945
	Sun	E.	61 4 2	3349	59 40 39	3339	58 17 4	3330	56 53 16	3310

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	0 43 11.92	9.103	N. 4 38 52.0	+57.81	16 2.08	64.53	3 51.94	0.752
Mon.	2	0 46 50.45	9.108	5 1 57.1	57.60	16 1.80	64.55	3 33.96	0.746
Tues.	3	0 50 29.12	9.115	5 24 56.9	57.37	16 1.52	64.57	3 16.13	0.740
Wed.	4	0 54 7.96	9.122	5 47 51.1	+57.13	16 1.24	64.59	2 58.46	0.733
Thur.	5	0 57 46.96	9.129	6 10 39.3	56.87	16 0.97	64.62	2 40.96	0.725
Frid.	6	1 1 26.16	9.137	6 33 21.1	56.59	16 0.69	64.65	2 23.65	0.717
Sat.	7	1 5 5.56	9.146	6 55 56.1	+56.30	16 0.42	64.68	2 6.54	0.708
SUN.	8	1 8 45.18	9.156	7 18 24.0	56.00	16 0.15	64.71	1 49.65	0.699
Mon.	9	1 12 25.03	9.166	7 40 44.4	55.69	15 59.88	64.75	1 32.99	0.689
Tues.	10	1 16 5.13	9.176	8 2 57.0	+55.35	15 59.62	64 79	1 16.58	0.678
Wed.	11	1 19 45.49	9.187	8 25 1.4	55.00	15 59.35	64.83	1 0.43	0.667
Thur.	12	1 23 26.13	9.199	8 46 57.3	54.64	15 59.09	64.88	0 44.56	0.655
Frid.	13	1 27 7.06	9.212	9 8 44.2	+54.26	15 58.82	64.92	0 28.98	0.643
Sat.	14	1 30 48.30	9.225	9 30 21.9	53.87	15 58.56	64.97	0 13.71	0.630
SUN.	15	1 34 29.88	9.239	9 51 50.1	53.47	15 58.30	65.03	0 1.23	0.616
Mon.	16	1 38 11.79	9.254	10 13 8.4	+53.05	15 58.04	65.08	0 15.83	0.601
Tues.	17	1 41 54.06	9.269	10 34 16.5	52.62	15 57.78	65.13	0 30.08	0.586
Wed.	18	1 45 36.71	9.285	10 55 14.1	52.17	15 57.52	65.19	0 43.94	0.570
Thur.	19	1 49 19.75	9.302	11 16 0.9	+51.71	15 57.27	65.25	0 57.42	0.553
Frid.	20	1 53 3.21	9.319	11 36 36.7	51.24	15 57.01	65.31	1 10.48	0.535
Sat.	21	1 56 47.09	9.338	11 57 1.0	50.77	15 56.75	65.38	1 23.12	0.517
SUN.	22	2 0 31.42	9.357	12 17 13.6	+50.28	15 56.49	65.44	1 35.31	0.498
Mon.	23	2 4 16.21	9.376	12 37 14.2	49.77	15 56.23	65.51	1 47.04	0.479
Tues.	24	2 8 1.48	9.396	12 57 2.5	49.25	15 55.97	65.58	1 58.30	0.459
Wed.	25	2 11 47.24	9.417	13 16 38.2	+48.71	15 55.72	65.65	2 9.06	0.438
Thur.	26	2 15 33.50	9.438	13 36 0.9	48.16	15 55.47	65.72	2 19.33	0.417
Frid.	27	2 19 20.28	9.460	13 55 10.4	47.61	15 55.22	65.79	2 29.08	0.395
Sat.	28	2 23 7.58	9.482	14 14 6.2	+47.04	15 54.97	65.86	2 38.31	0.373
SUN.	29	2 26 55.42	9.505	14 32 48.2	46.46	15 54.72	65.94	2 47.00	0.351
Mon.	30	2 30 43.81	9.528	14 51 15.9	45.86	15 54.47	66.01	2 55.15	0.328
Tues.	31	2 34 32.74	9.551	N.15 9 29.0	+45.24	15 54.23	66.09	3 2.75	0.305

Note.—The mean time of semidiameter passing may be found by subtracting 0ˢ.18 from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Subtracted from / Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	0 43 11.34	9.105	N. 4 38 48.3	+57.83	3 51.99	0.752	0 39 19.35
Mon.	2	0 46 49.91	9.110	5 1 53.6	57.62	3 34.01	0.746	0 43 15.90
Tues.	3	0 50 28.63	9.117	5 24 53.8	57.39	3 16.17	0.740	0 47 12.46
Wed.	4	0 54 7.50	9.124	5 47 48.2	+57.15	2 58.49	0.733	0 51 9.01
Thur.	5	0 57 46.55	9.131	6 10 36.7	56.89	2 40.99	0.725	0 55 5.56
Frid.	6	1 1 25.79	9.139	6 33 18.8	56.61	2 23.67	0.717	0 59 2.12
Sat.	7	1 5 5.23	9.148	6 55 54.1	+56.32	2 6.56	0.708	1 2 58.67
SUN.	8	1 8 44.90	9.158	7 18 22.3	56.02	1 49.67	0.699	1 6 55.23
Mon.	9	1 12 24.79	9.168	7 40 43.0	55.70	1 33.01	0.689	1 10 51.78
Tues.	10	1 16 4.93	9.178	8 2 55.9	+55.36	1 16.60	0.678	1 14 48.34
Wed.	11	1 19 45.33	9.189	8 25 0.5	55.01	1 0.44	0.667	1 18 44.89
Thur.	12	1 23 26.01	9 201	8 46 56.6	54.65	0 44.57	0.655	1 22 41.44
Frid.	13	1 27 6.99	9.214	9 8 43.8	+54.27	0 28.99	0.643	1 26 38.00
Sat.	14	1 30 48.27	9.227	9 30 21.7	53.88	0 13.72	0.630	1 30 34.55
SUN.	15	1 34 29.88	9.241	9 51 50.1	53.48	0 1.23	0.616	1 34 31.11
Mon.	16	1 38 11.83	9.256	10 13 8.6	+53.06	0 15.83	0.601	1 38 27.66
Tues.	17	1 41 54.14	9.271	10 34 16.9	52.63	0 30.08	0.586	1 42 24.22
Wed.	18	1 45 36.82	9.287	10 55 14.8	52.18	0 43.95	0.570	1 46 20.77
Thur.	19	1 49 19.90	9.304	11 16 1.8	+51.72	0 57.43	0.553	1 50 17.33
Frid.	20	1 53 3.39	9.321	11 36 37.7	51.25	1 10.49	0.535	1 54 13.88
Sat.	21	1 56 47.31	9.340	11 57 2.2	50.78	1 23.13	0.517	1 58 10.44
SUN.	22	2 0 31.67	9.359	12 17 14.9	+50.29	1 35.32	0.498	2 2 6.99
Mon.	23	2 4 16.49	9.378	12 37 15.7	49.78	1 47.05	0.479	2 6 3.55
Tues.	24	2 8 1.79	9.398	12 57 4.1	49.26	1 58.31	0.459	2 10 0.10
Wed.	25	2 11 47.58	9.419	13 16 39.9	+48.72	2 9.08	0.438	2 13 56.66
Thur.	26	2 15 33.86	9.440	13 36 2.8	48.17	2 19.35	0.417	2 17 53.21
Frid.	27	2 19 20.67	9.461	13 55 12.3	47.62	2 29.10	0.395	2 21 49.77
Sat.	28	2 23 8.00	9.483	14 14 8.3	+47.05	2 38.32	0.373	2 25 46.32
SUN.	29	2 26 55.86	9.506	14 32 50.3	46.46	2 47.02	0.351	2 29 42.88
Mon.	30	2 30 44.27	9.528	14 51 18.2	45.86	2 55.16	0.328	2 33 39.44
Tues.	31	2 34 33.22	9.551	N. 15 9 31.3	+45.24	3 2.77	0.305	2 37 35.99

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	91	11 44 58.0	44 49.0	147.89	− 0.58	9.9999633	+52.9	23 16 51.18
2	92	12 44 6.6	43 57.5	147.81	0.49	0.0000901	52.7	23 12 55.28
3	93	13 43 13.2	43 4.0	147.74	0.38	0.0002162	52.4	23 8 59.37
4	94	14 42 17.9	42 8.6	147.66	− 0.25	0.0003416	+52.1	23 5 3.46
5	95	15 41 20.7	41 11.3	147.57	− 0.12	0.0004664	51.8	23 1 7.55
6	96	16 40 21.5	40 11.9	147.48	+ 0.01	0.0005903	51.4	22 57 11.64
7	97	17 39 20.1	39 10.4	147.40	+ 0.14	0.0007133	+51.1	22 53 15.74
8	98	18 38 16.7	38 6.9	147.31	0.25	0.0008356	50.8	22 49 19.83
9	99	19 37 11.1	37 1.2	147.22	0.33	0.0009571	50.4	22 45 23.92
10	100	20 36 3.3	35 53.3	147.13	+ 0.38	0.0010777	+50.1	22 41 28.01
11	101	21 34 53.2	34 43.0	147.03	0.41	0.0011976	49.9	22 37 32.10
12	102	22 33 41.0	33 30.7	146.93	0.42	0.0013170	49.6	22 33 36.19
13	103	23 32 26.3	32 15.9	146.84	+ 0.38	0.0014359	+49.4	22 29 40.28
14	104	24 31 9.5	30 59.0	146.75	0.33	0.0015543	49.3	22 25 44.38
15	105	25 29 50.3	29 39.6	146.66	0.25	0.0016725	49.2	22 21 48.47
16	106	26 28 29.0	28 18.2	146.57	+ 0.14	0.0017904	+49.1	22 17 52.56
17	107	27 27 5.6	26 54.7	146.48	+ 0.02	0.0019080	49.0	22 13 56.65
18	108	28 25 40.1	25 29.0	146.39	− 0.12	0.0020255	48.9	22 10 0.74
19	109	29 24 12.6	24 1.4	146.31	− 0.25	0.0021428	+48.9	22 6 4.83
20	110	30 22 43.1	22 31.8	146.23	0.38	0.0022603	48.9	22 2 8.92
21	111	31 21 11.7	21 0.3	146.16	0.50	0.0023775	48.8	21 58 13.01
22	112	32 19 38.5	19 26.9	146.08	− 0.60	0.0024944	+48.7	21 54 17.10
23	113	33 18 3.6	17 51.9	146.01	0.68	0.0026112	48.6	21 50 21.20
24	114	34 16 27.0	16 15.2	145.94	0.73	0.0027277	48.5	21 46 25.28
25	115	35 14 48.8	14 36.8	145.87	− 0.75	0.0028438	+48.3	21 42 29.38
26	116	36 13 8.9	12 56.8	145.81	0.75	0.0029592	48.1	21 38 33.47
27	117	37 11 27.6	11 15.3	145.75	0.70	0.0030738	47.6	21 34 37.56
28	118	38 9 44.8	9 32.4	145.68	− 0.64	0.0031875	+47.2	21 30 41.65
29	119	39 8 0.4	7 47.8	145.62	0.55	0.0033003	46.7	21 26 45.74
30	120	40 6 14.6	6 1.9	145.56	0.44	0.0034118	46.1	21 22 49.83
31	121	41 4 27.3	4 14.4	145.50	− 0.31	0.0035218	+45.5	21 18 53.92

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^{\rm d}.0$.

Diff. for 1 Hour, $-9^{\rm s}.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 0.5	15 4.6	54 58.0	+1.18	55 13.1	+1.33	21 20.4	1.85	24.9
2	15 9.1	15 14.0	55 29.9	1.45	55 47.9	1.55	22 4.3	1.81	25.9
3	15 19.3	15 24.7	56 7.1	1.63	56 26.9	1.68	22 47.7	1.81	26.9
4	15 30.2	15 35.6	56 47.3	+1.68	57 7.2	+1.65	23 31.6	1.86	27.9
5	15 40.9	15 46.1	57 26.9	1.61	57 45.8	1.53	δ		28.9
6	15 51.0	15 55.4	58 3.5	1.42	58 19.9	1.30	0 17.2	1.95	0.3
7	15 59.5	16 3.0	58 34.7	+1.15	58 47.6	+1.00	1 5.7	2.10	1.3
8	16 6.0	16 8.4	58 58.6	0.83	59 7.5	0.66	1 58.3	2.29	2.3
9	16 10.3	16 11.6	59 14.4	0.50	59 19.4	0.33	2 55.5	2.47	3.3
10	16 12.4	16 12.8	59 22.4	+0.18	59 23.7	+0.04	3 56.7	2.61	4.3
11	16 12.7	16 12.2	59 23.4	−0.09	59 21.6	−0.21	5 0.1	2.64	5.3
12	16 11.4	16 10.2	59 18.4	0.32	59 14.0	0.42	6 2.9	2.56	6.3
13	16 8.6	16 6.9	59 8.4	−0.50	59 1.9	−0.59	7 2.4	2.39	7.3
14	16 4.8	16 2.5	58 54.3	0.67	58 45.8	0.75	7 57.5	2.20	8.3
15	15 59.9	15 57.1	58 36.3	0.83	58 25.9	0.90	8 48.4	2.04	9.3
16	15 54.0	15 50.7	58 14.6	−0.98	58 2.4	−1.05	9 35.9	1.92	10.3
17	15 47.1	15 43.3	57 49.3	1.13	57 35.3	1.20	10 21.2	1.86	11.3
18	15 39.3	15 35.1	57 20.6	1.25	57 5.2	1.30	11 5.7	1.85	12.3
19	15 30.8	15 26.4	56 49.3	−1.34	56 33.1	−1.36	11 50.5	1.89	13.3
20	15 21.9	15 17.4	56 16.6	1.37	56 0.2	1.35	12 36.6	1.95	14.3
21	15 13.0	15 8.8	55 44.1	1.32	55 28.6	1.26	13 24.5	2.04	15.3
22	15 4.8	15 1.0	55 13.8	−1.19	55 0.0	−1.09	14 14.5	2.12	16.3
23	14 57.6	14 54.7	54 47.6	0.97	54 36.7	0.84	15 6.1	2.17	17.3
24	14 52.2	14 50.2	54 27.5	0.68	54 20.3	0.51	15 58.3	2.17	18.3
25	14 48.8	14 48.0	54 15.2	−0.33	54 12.3	−0.13	16 49.9	2.12	19.3
26	14 47.9	14 48.5	54 12.0	+0.07	54 14.1	+0.28	17 39.8	2.04	20.3
27	14 49.8	14 51.7	54 18.8	0.50	54 26.0	0.71	18 27.6	1.94	21.3
28	14 54.4	14 57.8	54 35.8	+0.93	54 48.2	+1.13	19 13.1	1.85	22.3
29	15 1.8	15 6.5	55 2.9	1.33	55 20.0	1.51	19 56.9	1.80	23.3
30	15 11.7	15 17.3	55 39.1	1.67	56 0.0	1.80	20 39.8	1.78	24.3
31	15 23.4	15 29.9	56 22.4	+1.92	56 46.0	+2.00	21 22.9	1.82	25.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 20 44.90	2.0203	S. 20 0 52.5	10.907
1	21 22 46.03	2.0172	19 49 55.2	11.002
2	21 24 46.97	2.0142	19 38 52.3	11.095
3	21 26 47.73	2.0112	19 27 43.8	11.188
4	21 28 48.31	2.0082	19 16 29.7	11.281
5	21 30 48.72	2.0053	19 5 10.1	11.372
6	21 32 48.95	2.0024	18 53 45.1	11.462
7	21 34 49.01	1.9996	18 42 14.7	11.552
8	21 36 48.90	1.9968	18 30 38.9	11.641
9	21 38 48.62	1.9940	18 18 57.8	11.729
10	21 40 48.18	1.9912	18 7 11.4	11.816
11	21 42 47.57	1.9885	17 55 19.9	11.902
12	21 44 46.80	1.9858	17 43 23.2	11.988
13	21 46 45.87	1.9832	17 31 21.3	12.073
14	21 48 44.78	1.9806	17 19 14.4	12.158
15	21 50 43.54	1.9780	17 7 2.4	12.242
16	21 52 42.14	1.9755	16 54 45.4	12.324
17	21 54 40.60	1.9731	16 42 23.5	12.406
18	21 56 38.91	1.9706	16 29 56.7	12.487
19	21 58 37.07	1.9682	16 17 25.0	12.567
20	22 0 35.09	1.9659	16 4 48.6	12.647
21	22 2 32.97	1.9636	15 52 7.4	12.726
22	22 4 30.72	1.9613	15 39 21.5	12.804
23	22 6 28.33	1.9591	S. 15 26 30.9	12.882

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 8 25.81	1.9569	S. 15 13 35.7	12.958
1	22 10 23.16	1.9548	15 0 36.0	13.033
2	22 12 20.39	1.9528	14 47 31.7	13.108
3	22 14 17.50	1.9508	14 34 23.0	13.182
4	22 16 14.49	1.9488	14 21 9.9	13.255
5	22 18 11.36	1.9468	14 7 52.4	13.327
6	22 20 8.11	1.9450	13 54 30.6	13.398
7	22 22 4.76	1.9432	13 41 4.6	13.469
8	22 24 1.30	1.9414	13 27 34.3	13.539
9	22 25 57.73	1.9397	13 13 59.9	13.608
10	22 27 54.06	1.9381	13 0 21.4	13.676
11	22 29 50.30	1.9366	12 46 38.8	13.743
12	22 31 46.45	1.9351	12 32 52.2	13.809
13	22 33 42.51	1.9336	12 19 1.7	13.875
14	22 35 38.48	1.9321	12 5 7.2	13.940
15	22 37 34.36	1.9307	11 51 8.9	14.004
16	22 39 30.16	1.9294	11 37 6.8	14.067
17	22 41 25.89	1.9282	11 23 0.9	14.128
18	22 43 21.55	1.9271	11 8 51.4	14.189
19	22 45 17.14	1.9259	10 54 38.2	14.250
20	22 47 12.66	1.9248	10 40 21.4	14.309
21	22 49 8.12	1.9238	10 26 1.1	14.367
22	22 51 3.52	1.9229	10 11 37.3	14.425
23	22 52 58.87	1.9221	9 57 10.1	14.481
24	22 54 54.17	1.9213	S. 9 42 39.6	14.537

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 54 54.17	1.9213	S. 9 42 39.6	14.537
1	22 56 49.42	1.9205	9 28 5.7	14.592
2	22 58 44.63	1.9198	9 13 28.5	14.646
3	23 0 39.80	1.9192	8 58 48.2	14.699
4	23 2 34.93	1.9187	8 44 4.7	14.751
5	23 4 30.04	1.9182	8 29 18.1	14.802
6	23 6 25.12	1.9178	8 14 28.4	14.852
7	23 8 20.17	1.9174	7 59 35.8	14.902
8	23 10 15.21	1.9171	7 44 40.2	14.950
9	23 12 10.23	1.9169	7 29 41.8	14.997
10	23 14 5.24	1.9168	7 14 40.6	15.043
11	23 16 0.24	1.9167	6 59 36.6	15.090
12	23 17 55.24	1.9167	6 44 29.8	15.135
13	23 19 50.24	1.9168	6 29 20.4	15.178
14	23 21 45.25	1.9169	6 14 8.5	15.219
15	23 23 40.27	1.9171	5 58 54.1	15.260
16	23 25 35.30	1.9173	5 43 37.3	15.301
17	23 27 30.35	1.9177	5 28 18.0	15.341
18	23 29 25.42	1.9181	5 12 56.4	15.379
19	23 31 20.52	1.9186	4 57 32.5	15.417
20	23 33 15.65	1.9191	4 42 6.4	15.453
21	23 35 10.81	1.9197	4 26 38.2	15.488
22	23 37 6.01	1.9204	4 11 7.9	15.522
23	23 39 1.26	1.9212	S. 3 55 35.6	15.555

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 40 56.56	1.9221	S. 3 40 1.3	15.587
1	23 42 51.91	1.9230	3 24 25.1	15.618
2	23 44 47.32	1.9240	3 8 47.1	15.648
3	23 46 42.79	1.9250	2 53 7.3	15.677
4	23 48 38.32	1.9262	2 37 25.8	15.705
5	23 50 33.93	1.9274	2 21 42.7	15.733
6	23 52 29.61	1.9287	2 5 57.9	15.759
7	23 54 25.37	1.9301	1 50 11.6	15.783
8	23 56 21.22	1.9316	1 34 23.9	15.806
9	23 58 17.16	1.9331	1 18 34.9	15.828
10	0 0 13.19	1.9347	1 2 44.6	15.849
11	0 2 9.32	1.9363	0 46 53.0	15.869
12	0 4 5.55	1.9381	0 31 0.3	15.887
13	0 6 1.89	1.9399	S. 0 15 6.5	15.905
14	0 7 58.34	1.9418	N. 0 0 48.3	15.922
15	0 9 54.91	1.9438	0 16 44.1	15.938
16	0 11 51.60	1.9459	0 32 40.8	15.952
17	0 13 48.42	1.9480	0 48 38.3	15.964
18	0 15 45.36	1.9502	1 4 36.5	15.975
19	0 17 42.44	1.9525	1 20 35.3	15.986
20	0 19 39.66	1.9549	1 36 34.8	15.996
21	0 21 37.03	1.9574	1 52 34.8	16.003
22	0 23 34.55	1.9600	2 8 35.2	16.010
23	0 25 32.23	1.9626	2 24 36.0	16.016
24	0 27 30.06	1.9653	N. 2 40 37.1	16.020

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 27 30.06	1.9653	N. 2 40 37.1	16.020
1	0 29 28.06	1.9681	2 56 38.4	16.022
2	0 31 26.23	1.9709	3 12 39.8	16.024
3	0 33 24.57	1.9738	3 28 41.3	16.024
4	0 35 23.09	1.9769	3 44 42.7	16.023
5	0 37 21.80	1.9800	4 0 44.0	16.021
6	0 39 20.69	1.9832	4 16 45.2	16.018
7	0 41 19.78	1.9865	4 32 46.1	16.013
8	0 43 19.07	1.9898	4 48 46.7	16.006
9	0 45 18.56	1.9932	5 4 46.8	15.997
10	0 47 18.25	1.9966	5 20 46.4	15.988
11	0 49 18.15	2.0002	5 36 45.4	15.978
12	0 51 18.27	2.0039	5 52 43.8	15.967
13	0 53 18.62	2.0076	6 8 41.4	15.953
14	0 55 19.19	2.0114	6 24 38.2	15.938
15	0 57 19.99	2.0153	6 40 34.0	15.922
16	0 59 21.03	2.0194	6 56 28.8	15.904
17	1 1 22.32	2.0235	7 12 22.5	15.886
18	1 3 23.85	2.0276	7 28 15.1	15.866
19	1 5 25.63	2.0318	7 44 6.4	15.843
20	1 7 27.67	2.0362	7 59 56.3	15.819
21	1 9 29.97	2.0406	8 15 44.7	15.794
22	1 11 32.54	2.0450	8 31 31.6	15.768
23	1 13 35.37	2.0494	N. 8 47 16.9	15.740

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 15 38.47	2.0540	N. 9 3 0.4	15.710
1	1 17 41.85	2.0588	9 18 42.1	15.679
2	1 19 45.52	2.0636	9 34 21.9	15.647
3	1 21 49.48	2.0684	9 49 59.8	15.613
4	1 23 53.73	2.0733	10 5 35.5	15.577
5	1 25 58.28	2.0783	10 21 9.0	15.540
6	1 28 3.13	2.0834	10 36 40.3	15.502
7	1 30 8.29	2.0886	10 52 9.2	15.461
8	1 32 13.76	2.0938	11 7 35.6	15.418
9	1 34 19.54	2.0990	11 22 59.4	15.375
10	1 36 25.64	2.1044	11 38 20.6	15.330
11	1 38 32.07	2.1098	11 53 39.0	15.283
12	1 40 38.82	2.1154	12 8 54.5	15.234
13	1 42 45.91	2.1210	12 24 7.1	15.184
14	1 44 53.34	2.1266	12 39 16.6	15.132
15	1 47 1.10	2.1323	12 54 22.9	15.078
16	1 49 9.21	2.1381	13 9 26.0	15.023
17	1 51 17.67	2.1440	13 24 25.7	14.966
18	1 53 26.49	2.1499	13 39 21.9	14.907
19	1 55 35.66	2.1559	13 54 14.6	14.847
20	1 57 45.20	2.1620	14 9 3.6	14.785
21	1 59 55.10	2.1681	14 23 48.8	14.721
22	2 2 5.37	2.1743	14 38 30.1	14.655
23	2 4 16.02	2.1806	14 53 7.4	14.588
24	2 6 27.04	2.1869	N.15 7 40.7	14.519

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 6 27.04	2.1869	N.15 7 40.7	14.519
1	2 8 38.44	2.1933	15 22 9.7	14.448
2	2 10 50.23	2.1997	15 36 34.4	14.376
3	2 13 2.40	2.2061	15 50 54.8	14.302
4	2 15 14.96	2.2126	16 5 10.6	14.225
5	2 17 27.92	2.2192	16 19 21.8	14.147
6	2 19 41.27	2.2259	16 33 28.3	14.067
7	2 21 55.02	2.2326	16 47 29.9	13.986
8	2 24 9.18	2.2393	17 1 26.6	13.903
9	2 26 23.74	2.2461	17 15 18.2	13.817
10	2 28 38.71	2.2530	17 29 4.6	13.729
11	2 30 54.10	2.2599	17 42 45.7	13.641
12	2 33 9.90	2.2668	17 56 21.5	13.551
13	2 35 26.12	2.2737	18 9 51.8	13.458
14	2 37 42.75	2.2807	18 23 16.4	13.363
15	2 39 59.80	2.2877	18 36 35.3	13.266
16	2 42 17.28	2.2948	18 49 48.3	13.167
17	2 44 35.18	2.3018	19 2 55.4	13.063
18	2 46 53.50	2.3089	19 15 56.5	12.967
19	2 49 12.25	2.3161	19 28 51.4	12.863
20	2 51 31.44	2.3234	19 41 40.0	12.757
21	2 53 51.06	2.3306	19 54 22.2	12.649
22	2 56 11.11	2.3378	20 6 57.9	12.540
23	2 58 31.60	2.3451	N.20 19 27.0	12.429

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 0 52.52	2.3523	N.20 31 49.4	12.316
1	3 3 13.88	2.3596	20 44 4.9	12.201
2	3 5 35.67	2.3668	20 56 13.5	12.084
3	3 7 57.90	2.3741	21 8 15.0	11.965
4	3 10 20.57	2.3814	21 20 9.3	11.844
5	3 12 43.67	2.3887	21 31 56.3	11.722
6	3 15 7.21	2.3960	21 43 36.0	11.598
7	3 17 31.19	2.4033	21 55 8.1	11.472
8	3 19 55.61	2.4106	22 6 32.6	11.344
9	3 22 20.46	2.4178	22 17 49.4	11.214
10	3 24 45.75	2.4251	22 28 58.3	11.082
11	3 27 11.47	2.4323	22 39 59.3	10.949
12	3 29 37.62	2.4395	22 50 52.2	10.813
13	3 32 4.21	2.4467	23 1 36.9	10.677
14	3 34 31.23	2.4538	23 12 13.4	10.538
15	3 36 58.67	2.4609	23 22 41.5	10.397
16	3 39 26.54	2.4681	23 33 1.1	10.255
17	3 41 54.84	2.4752	23 43 12.1	10.110
18	3 44 23.56	2.4822	23 53 14.3	9.963
19	3 46 52.70	2.4892	24 3 7.7	9.816
20	3 49 22.26	2.4961	24 12 52.2	9.668
21	3 51 52.23	2.5029	24 22 27.8	9.517
22	3 54 22.61	2.5097	24 31 54.2	9.363
23	3 56 53.40	2.5165	24 41 11.4	9.209
24	3 59 24.59	2.5232	N.24 50 19.3	9.053

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 9.					**WEDNESDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 59 24.59	2.5232	N.24 50 19.3	9.053	0	6 6 11.57	2.7034	N.28 39 10.8	+ 0.121
1	4 1 56.18	2.5298	24 59 17.8	8.895	1	6 8 53.77	2.7032	28 39 12.0	− 0.081
2	4 4 28.17	2.5364	25 8 6.7	8.735	2	6 11 35.95	2.7028	28 39 1.1	0.282
3	4 7 0.55	2.5428	25 16 46.0	8.574	3	6 14 18.10	2.7021	28 38 38.1	0.484
4	4 9 33.31	2.5492	25 25 15.6	8.412	4	6 17 0.20	2.7012	28 38 3.0	0.685
5	4 12 6.46	2.5556	25 33 35.4	8.247	5	6 19 42.25	2.7003	28 37 15.9	0.885
6	4 14 39.99	2.5619	25 41 45.2	8.080	6	6 22 24.24	2.6992	28 36 16.8	1.086
7	4 17 13.89	2.5681	25 49 45.0	7.913	7	6 25 6.15	2.6978	28 35 5.6	1.286
8	4 19 48.16	2.5741	25 57 34.8	7.746	8	6 27 47.98	2.6962	28 33 42.5	1.485
9	4 22 22.78	2.5800	26 5 14.5	7.576	9	6 30 29.70	2.6944	28 32 7.4	1.685
10	4 24 57.76	2.5859	26 12 43.9	7.403	10	6 33 11.31	2.6926	28 30 20.3	1.884
11	4 27 33.09	2.5917	26 20 2.9	7.229	11	6 35 52.81	2.6906	28 28 21.3	2.083
12	4 30 8.76	2.5973	26 27 11.4	7.054	12	6 38 34.18	2.6883	28 26 10.4	2.281
13	4 32 44.76	2.6028	26 34 9.4	6.878	13	6 41 15.41	2.6859	28 23 47.6	2.478
14	4 35 21.10	2.6083	26 40 56.8	6.702	14	6 43 56.49	2.6832	28 21 13.0	2.675
15	4 37 57.76	2.6137	26 47 33.6	6.523	15	6 46 37.40	2.6804	28 18 26.6	2.872
16	4 40 34.74	2.6188	26 53 59.6	6.343	16	6 49 18.14	2.6775	28 15 28.4	3.067
17	4 43 12.02	2.6238	27 0 14.8	6.161	17	6 51 58.70	2.6745	28 12 18.6	3.261
18	4 45 49.60	2.6287	27 6 19.0	5.978	18	6 54 39.08	2.6712	28 8 57.1	3.455
19	4 48 27.47	2.6336	27 12 12.2	5.795	19	6 57 19.25	2.6677	28 5 24.0	3.648
20	4 51 5.63	2.6383	27 17 54.4	5.611	20	6 59 59.21	2.6642	28 1 39.3	3.841
21	4 53 44.06	2.6428	27 23 25.5	5.424	21	7 2 38.95	2.6604	27 57 43.0	4.033
22	4 56 22.76	2.6472	27 28 45.3	5.237	22	7 5 18.46	2.6566	27 53 35.3	4.223
23	4 59 1.72	2.6514	N.27 33 53.9	5.049	23	7 7 57.74	2.6526	N.27 49 16.2	4.413
	TUESDAY 10.					**THURSDAY 12.**			
0	5 1 40.93	2.6555	N.27 38 51.2	4.860	0	7 10 36.77	2.6483	N.27 44 45.7	4.602
1	5 4 20.38	2.6594	27 43 37.1	4.669	1	7 13 15.54	2.6440	27 40 3.9	4.790
2	5 7 0.06	2.6633	27 48 11.5	4.478	2	7 15 54.05	2.6396	27 35 10.9	4.977
3	5 9 39.97	2.6669	27 52 34.5	4.287	3	7 18 32.29	2.6351	27 30 6.7	5.162
4	5 12 20.09	2.6703	27 56 46.0	4.094	4	7 21 10.26	2.6303	27 24 51.4	5.347
5	5 15 0.41	2.6737	28 0 45.8	3.900	5	7 23 47.93	2.6253	27 19 25.1	5.530
6	5 17 40.93	2.6768	28 4 34.0	3.706	6	7 26 25.30	2.6203	27 13 47.8	5.712
7	5 20 21.63	2.6798	28 8 10.5	3.511	7	7 29 2.37	2.6153	27 7 59.6	5.893
8	5 23 2.50	2.6826	28 11 35.3	3.316	8	7 31 39.14	2.6101	27 2 0.6	6.072
9	5 25 43.54	2.6853	28 14 48.4	3.119	9	7 34 15.59	2.6047	26 55 50.9	6.251
10	5 28 24.73	2.6878	28 17 49.6	2.921	10	7 36 51.71	2.5992	26 49 30.5	6.428
11	5 31 6.07	2.6901	28 20 38.9	2.723	11	7 39 27.50	2.5937	26 42 59.5	6.605
12	5 33 47.54	2.6922	28 23 16.4	2.526	12	7 42 2.96	2.5881	26 36 17.9	6.780
13	5 36 29.13	2.6941	28 25 42.0	2.327	13	7 44 38.07	2.5823	26 29 25.9	6.953
14	5 39 10.83	2.6959	28 27 55.6	2.127	14	7 47 12.83	2.5764	26 22 23.5	7.125
15	5 41 52.64	2.6975	28 29 57.2	1.928	15	7 49 47.24	2.5705	26 15 10.9	7.295
16	5 44 34.53	2.6988	28 31 46.9	1.728	16	7 52 21.29	2.5644	26 7 48.1	7.464
17	5 47 16.50	2.7001	28 33 24.6	1.528	17	7 54 54.97	2.5583	26 0 15.2	7.632
18	5 49 58.54	2.7012	28 34 50.2	1.327	18	7 57 28.29	2.5522	25 52 32.3	7.798
19	5 52 40.64	2.7020	28 36 3.8	1.126	19	8 0 1.23	2.5458	25 44 39.5	7.963
20	5 55 22.78	2.7026	28 37 5.3	0.925	20	8 2 33.79	2.5394	25 36 36.8	8.126
21	5 58 4.95	2.7031	28 37 54.8	0.724	21	8 5 5.96	2.5329	25 28 24.4	8.287
22	6 0 47.15	2.7034	28 38 32.2	0.523	22	8 7 37.74	2.5264	25 20 2.3	8.447
23	6 3 29.36	2.7035	28 38 57.5	0.322	23	8 10 9.13	2.5199	25 11 30.7	8.606
24	6 6 11.57	2.7034	N.28 39 10.8	+ 0.121	24	8 12 40.13	2.5133	N.25 2 49.6	8.763

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 12 40.13	2.5133	N.25 2 49.6	8.763
1	8 15 10.73	2.5066	24 53 59.1	8.918
2	8 17 40.92	2.4998	24 44 59.4	9.072
3	8 20 10.70	2.4930	24 35 50.5	9.224
4	8 22 40.08	2.4862	24 26 32.5	9.375
5	8 25 9.05	2.4793	24 17 5.5	9.524
6	8 27 37.60	2.4723	24 7 29.6	9.672
7	8 30 5.73	2.4654	23 57 44.9	9.817
8	8 32 33.45	2.4585	23 47 51.5	9.960
9	8 35 0.75	2.4515	23 37 49.6	10.102
10	8 37 27.63	2.4444	23 27 39.2	10.243
11	8 39 54.08	2.4373	23 17 20.4	10.383
12	8 42 20.11	2.4302	23 6 53.2	10.521
13	8 44 45.71	2.4232	22 56 17.9	10.656
14	8 47 10.89	2.4162	22 45 34.5	10.789
15	8 49 35.65	2.4091	22 34 43.2	10.921
16	8 51 59.98	2.4019	22 23 44.0	11.052
17	8 54 23.88	2.3948	22 12 37.0	11.180
18	8 56 47.36	2.3877	22 1 22.4	11.307
19	8 59 10.41	2.3806	21 50 0.2	11.432
20	9 1 33.03	2.3735	21 38 30.5	11.556
21	9 3 55.23	2.3664	21 26 53.5	11.677
22	9 6 17.00	2.3593	21 15 9.2	11.798
23	9 8 38.35	2.3522	N.21 3 17.7	11.917

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 10 59.27	2.3452	N.20 51 19.2	12.033
1	9 13 19.77	2.3382	20 39 13.7	12.148
2	9 15 39.85	2.3312	20 27 1.4	12.261
3	9 17 59.52	2.3243	20 14 42.4	12.372
4	9 20 18.77	2.3173	20 2 16.8	12.482
5	9 22 37.60	2.3103	19 49 44.6	12.590
6	9 24 56.01	2.3034	19 37 6.0	12.696
7	9 27 14.01	2.2966	19 24 21.1	12.800
8	9 29 31.60	2.2898	19 11 30.0	12.903
9	9 31 48.79	2.2831	18 58 32.7	13.005
10	9 34 5.57	2.2763	18 45 29.4	13.104
11	9 36 21.95	2.2696	18 32 20.2	13.202
12	9 38 37.92	2.2629	18 19 5.2	13.298
13	9 40 53.50	2.2563	18 5 44.5	13.392
14	9 43 8.68	2.2497	17 52 18.2	13.484
15	9 45 23.47	2.2432	17 38 46.4	13.575
16	9 47 37.87	2.2368	17 25 9.2	13.664
17	9 49 51.89	2.2305	17 11 26.7	13.752
18	9 52 5.53	2.2242	16 57 39.0	13.838
19	9 54 18.79	2.2179	16 43 46.2	13.922
20	9 56 31.67	2.2116	16 29 48.4	14.004
21	9 58 44.18	2.2054	16 15 45.7	14.085
22	10 0 56.32	2.1993	16 1 38.2	14.164
23	10 3 8.10	2.1933	15 47 26.0	14.242
24	10 5 19.52	2.1873	N.15 33 9.2	14.318

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 5 19.52	2.1873	N.15 33 9.2	14.318
1	10 7 30.58	2.1814	15 18 47.9	14.392
2	10 9 41.29	2.1756	15 4 22.2	14.464
3	10 11 51.65	2.1698	14 49 52.2	14.535
4	10 14 1.67	2.1641	14 35 18.0	14.604
5	10 16 11.34	2.1584	14 20 39.7	14.672
6	10 18 20.67	2.1527	14 5 57.3	14.739
7	10 20 29.67	2.1473	13 51 11.0	14.803
8	10 22 38.35	2.1419	13 36 20.9	14.867
9	10 24 46.70	2.1365	13 21 27.0	14.928
10	10 26 54.73	2.1313	13 6 29.5	14.988
11	10 29 2.45	2.1261	12 51 28.5	15.046
12	10 31 9.86	2.1209	12 36 24.0	15.103
13	10 33 16.96	2.1158	12 21 16.2	15.158
14	10 35 23.76	2.1108	12 6 5.1	15.212
15	10 37 30.26	2.1059	11 50 50.8	15.264
16	10 39 36.47	2.1011	11 35 33.4	15.315
17	10 41 42.39	2.0963	11 20 13.0	15.363
18	10 43 48.03	2.0917	11 4 49.8	15.410
19	10 45 53.39	2.0871	10 49 23.8	15.457
20	10 47 58.48	2.0825	10 33 55.0	15.502
21	10 50 3.29	2.0780	10 18 23.6	15.544
22	10 52 7.84	2.0737	10 2 49.7	15.586
23	10 54 12.14	2.0695	N. 9 47 13.3	15.627

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 56 16.18	2.0653	N. 9 31 34.5	15.665
1	10 58 19.97	2.0612	9 15 53.5	15.702
2	11 0 23.52	2.0571	9 0 10.3	15.738
3	11 2 26.82	2.0531	8 44 25.0	15.772
4	11 4 29.89	2.0493	8 28 37.7	15.804
5	11 6 32.73	2.0455	8 12 48.5	15.836
6	11 8 35.35	2.0418	7 56 57.4	15.866
7	11 10 37.75	2.0382	7 41 4.6	15.894
8	11 12 39.93	2.0346	7 25 10.1	15.922
9	11 14 41.90	2.0311	7 9 14.0	15.948
10	11 16 43.66	2.0278	6 53 16.4	15.972
11	11 18 45.23	2.0245	6 37 17.4	15.994
12	11 20 46.60	2.0213	6 21 17.1	16.016
13	11 22 47.78	2.0182	6 5 15.5	16.036
14	11 24 48.78	2.0151	5 49 12.8	16.054
15	11 26 49.59	2.0121	5 33 9.0	16.072
16	11 28 50.23	2.0092	5 17 4.2	16.088
17	11 30 50.70	2.0065	5 0 58.5	16.103
18	11 32 51.01	2.0038	4 44 51.9	16.116
19	11 34 51.16	2.0011	4 28 44.6	16.127
20	11 36 51.15	1.9985	4 12 36.6	16.138
21	11 38 50.98	1.9960	3 56 28.0	16.147
22	11 40 50.67	1.9937	3 40 18.9	16.156
23	11 42 50.22	1.9914	3 24 9.3	16.163
24	11 44 49.64	1.9892	N. 3 7 59.4	16.167

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 44 49.64	1.9892	N. 3 7 59.4	16.167
1	11 46 48.93	1.9871	2 51 49.3	16.171
2	11 48 48.09	1.9850	2 35 38.9	16.174
3	11 50 47.13	1.9830	2 19 28.4	16.176
4	11 52 46.05	1.9811	2 3 17.8	16.176
5	11 54 44.86	1.9793	1 47 7.3	16.174
6	11 56 43.57	1.9777	1 30 56.9	16.172
7	11 58 42.18	1.9760	1 14 46.7	16.168
8	12 0 40.69	1.9744	0 58 36.7	16.163
9	12 2 39.11	1.9729	0 42 27.1	16.157
10	12 4 37.44	1.9715	0 26 17.9	16.149
11	12 6 35.69	1.9702	N. 0 10 9.2	16.140
12	12 8 33.86	1.9689	S. 0 5 58.9	16.129
13	12 10 31.96	1.9677	0 22 6.3	16.118
14	12 12 29.99	1.9667	0 38 13.1	16.107
15	12 14 27.96	1.9657	0 54 19.1	16.093
16	12 16 25.87	1.9647	1 10 24.2	16.078
17	12 18 23.73	1.9639	1 26 28.4	16.062
18	12 20 21.54	1.9631	1 42 31.6	16.044
19	12 22 19.30	1.9624	1 58 33.7	16.025
20	12 24 17.03	1.9618	2 14 34.6	16.004
21	12 26 14.72	1.9612	2 30 34.2	15.983
22	12 28 12.38	1.9607	2 46 32.5	15.961
23	12 30 10.01	1.9603	S. 3 2 29.5	15.938

WEDNESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 32 7.62	1.9600	S. 3 18 25.0	15.913
1	12 34 5.21	1.9598	3 34 19.0	15.887
2	12 36 2.79	1.9597	3 50 11.4	15.859
3	12 38 0.37	1.9596	4 6 2.1	15.830
4	12 39 57.94	1.9595	4 21 51.0	15.801
5	12 41 55.51	1.9596	4 37 38.2	15.771
6	12 43 53.09	1.9597	4 53 23.5	15.739
7	12 45 50.68	1.9599	5 9 6.9	15.706
8	12 47 48.28	1.9602	5 24 48.2	15.671
9	12 49 45.90	1.9605	5 40 27.4	15.636
10	12 51 43.54	1.9609	5 56 4.5	15.599
11	12 53 41.21	1.9614	6 11 39.3	15.561
12	12 55 38.91	1.9619	6 27 11.8	15.522
13	12 57 36.64	1.9626	6 42 41.9	15.482
14	12 59 34.42	1.9633	6 58 9.6	15.441
15	13 1 32.24	1.9640	7 13 34.8	15.398
16	13 3 30.10	1.9648	7 28 57.4	15.355
17	13 5 28.02	1.9657	7 44 17.4	15.311
18	13 7 25.99	1.9667	7 59 34.7	15.265
19	13 9 24.02	1.9677	8 14 49.2	15.217
20	13 11 22.11	1.9687	8 30 0.8	15.169
21	13 13 20.27	1.9699	8 45 9.5	15.120
22	13 15 18.50	1.9712	9 0 15.2	15.070
23	13 17 16.81	1.9724	9 15 17.9	15.018
24	13 19 15.19	1.9737	S. 9 30 17.4	14.965

THURSDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 19 15.19	1.9737	S. 9 30 17.4	14.965
1	13 21 13.65	1.9751	9 45 13.7	14.912
2	13 23 12.20	1.9766	10 0 6.8	14.858
3	13 25 10.84	1.9782	10 14 56.6	14.802
4	13 27 9.58	1.9798	10 29 43.0	14.744
5	13 29 8.41	1.9814	10 44 25.9	14.686
6	13 31 7.34	1.9831	10 59 5.3	14.627
7	13 33 6.38	1.9848	11 13 41.1	14.567
8	13 35 5.52	1.9866	11 28 13.3	14.505
9	13 37 4.77	1.9884	11 42 41.7	14.442
10	13 39 4.13	1.9903	11 57 6.3	14.379
11	13 41 3.61	1.9923	12 11 27.1	14.315
12	13 43 3.21	1.9943	12 25 44.1	14.250
13	13 45 2.93	1.9964	12 39 57.1	14.182
14	13 47 2.78	1.9986	12 54 6.0	14.113
15	13 49 2.76	2.0008	13 8 10.7	14.044
16	13 51 2.87	2.0030	13 22 11.3	13.975
17	13 53 3.12	2.0052	13 36 7.7	13.904
18	13 55 3.50	2.0075	13 49 59.8	13.832
19	13 57 4.02	2.0099	14 3 47.5	13.758
20	13 59 4.69	2.0123	14 17 30.8	13.684
21	14 1 5.50	2.0147	14 31 9.6	13.609
22	14 3 6.46	2.0173	14 44 43.9	13.533
23	14 5 7.58	2.0199	S. 14 58 13.6	13.456

FRIDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 7 8.85	2.0224	S. 15 11 38.6	13.377
1	14 9 10.27	2.0251	15 24 58.9	13.298
2	14 11 11.86	2.0278	15 38 14.4	13.217
3	14 13 13.61	2.0305	15 51 25.0	13.136
4	14 15 15.52	2.0332	16 4 30.7	13.053
5	14 17 17.60	2.0360	16 17 31.4	12.970
6	14 19 19.84	2.0388	16 30 27.1	12.886
7	14 21 22.26	2.0417	16 43 17.7	12.800
8	14 23 24.85	2.0446	16 56 3.1	12.713
9	14 25 27.61	2.0475	17 8 43.3	12.626
10	14 27 30.55	2.0505	17 21 18.2	12.537
11	14 29 33.67	2.0534	17 33 47.8	12.448
12	14 31 36.96	2.0564	17 46 12.0	12.357
13	14 33 40.44	2.0595	17 58 30.7	12.266
14	14 35 44.10	2.0625	18 10 43.9	12.174
15	14 37 47.94	2.0656	18 22 51.6	12.082
16	14 39 51.97	2.0687	18 34 53.7	11.987
17	14 41 56.19	2.0719	18 46 50.0	11.890
18	14 44 0.60	2.0750	18 58 40.5	11.793
19	14 46 5.19	2.0782	19 10 25.2	11.696
20	14 48 9.98	2.0814	19 22 4.1	11.599
21	14 50 14.96	2.0846	19 33 37.1	11.500
22	14 52 20.13	2.0878	19 45 4.1	11.400
23	14 54 25.50	2.0911	19 56 25.1	11.300
24	14 56 31.06	2.0943	S. 20 7 40.1	11.198

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 56 31.06	2.0943	S. 20 7 40.1	11.198
1	14 58 36.81	2.0975	20 18 48.9	11.095
2	15 0 42.76	2.1008	20 29 51.5	10.992
3	15 2 48.91	2.1041	20 40 47.9	10.887
4	15 4 55.26	2.1074	20 51 38.0	10.782
5	15 7 1.80	2.1107	21 2 21.7	10.675
6	15 9 8.54	2.1140	21 12 59.0	10.568
7	15 11 15.48	2.1173	21 23 29.9	10.460
8	15 13 22.62	2.1206	21 33 54.2	10.351
9	15 15 29.95	2.1239	21 44 12.0	10.242
10	15 17 37.48	2.1272	21 54 23.2	10.131
11	15 19 45.21	2.1304	22 4 27.7	10.019
12	15 21 53.13	2.1337	22 14 25.5	9.907
13	15 24 1.25	2.1370	22 24 16.6	9.794
14	15 26 9.57	2.1403	22 34 0.8	9.680
15	15 28 18.09	2.1436	22 43 38.2	9.566
16	15 30 26.80	2.1468	22 53 8.7	9.450
17	15 32 35.70	2.1500	23 2 32.2	9.333
18	15 34 44.80	2.1532	23 11 48.7	9.216
19	15 36 54.09	2.1564	23 20 58.1	9.099
20	15 39 3.57	2.1597	23 30 0.5	8.981
21	15 41 13.25	2.1629	23 38 55.8	8.862
22	15 43 23.12	2.1660	23 47 43.9	8.741
23	15 45 33.17	2.1691	S. 23 56 24.7	8.620

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 47 43.41	2.1722	S. 24 4 58.3	8.499
1	15 49 53.84	2.1753	24 13 24.6	8.377
2	15 52 4.45	2.1783	24 21 43.5	8.253
3	15 54 15.24	2.1813	24 29 55.0	8.129
4	15 56 26.21	2.1843	24 37 59.0	8.005
5	15 58 37.36	2.1873	24 45 55.6	7.881
6	16 0 48.69	2.1902	24 53 44.7	7.755
7	16 3 0.19	2.1931	25 1 26.2	7.628
8	16 5 11.86	2.1960	25 9 0.1	7.502
9	16 7 23.71	2.1988	25 16 26.4	7.374
10	16 9 35.72	2.2016	25 23 45.0	7.246
11	16 11 47.90	2.2043	25 30 55.9	7.117
12	16 14 0.24	2.2070	25 37 59.0	6.987
13	16 16 12.74	2.2097	25 44 54.4	6.857
14	16 18 25.40	2.2123	25 51 41.9	6.727
15	16 20 38.22	2.2149	25 58 21.6	6.596
16	16 22 51.19	2.2173	26 4 53.4	6.464
17	16 25 4.30	2.2197	26 11 17.3	6.332
18	16 27 17.56	2.2222	26 17 33.3	6.200
19	16 29 30.97	2.2246	26 23 41.3	6.067
20	16 31 44.51	2.2269	26 29 41.3	5.933
21	16 33 58.19	2.2291	26 35 33.2	5.798
22	16 36 12.00	2.2312	26 41 17.1	5.664
23	16 38 25.94	2.2334	26 46 52.9	5.529
24	16 40 40.01	2.2355	S. 26 52 20.6	5.393

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 40 40.01	2.2355	S. 26 52 20.6	5.393
1	16 42 54.20	2.2375	26 57 40.1	5.258
2	16 45 8.51	2.2395	27 2 51.5	5.122
3	16 47 22.94	2.2414	27 7 54.7	4.985
4	16 49 37.48	2.2432	27 12 49.7	4.848
5	16 51 52.12	2.2449	27 17 36.4	4.710
6	16 54 6.87	2.2466	27 22 14.9	4.572
7	16 56 21.72	2.2482	27 26 45.1	4.434
8	16 58 36.66	2.2498	27 31 7.0	4.296
9	17 0 51.70	2.2513	27 35 20.6	4.157
10	17 3 6.82	2.2527	27 39 25.9	4.018
11	17 5 22.02	2.2541	27 43 22.8	3.879
12	17 7 37.31	2.2554	27 47 11.4	3.740
13	17 9 52.67	2.2566	27 50 51.6	3.599
14	17 12 8.10	2.2577	27 54 23.3	3.459
15	17 14 23.59	2.2587	27 57 46.7	3.320
16	17 16 39.14	2.2597	28 1 1.7	3.179
17	17 18 54.75	2.2606	28 4 8.2	3.038
18	17 21 10.41	2.2614	28 7 6.3	2.897
19	17 23 26.12	2.2622	28 9 55.9	2.757
20	17 25 41.87	2.2628	28 12 37.1	2.616
21	17 27 57.66	2.2634	28 15 9.8	2.474
22	17 30 13.48	2.2639	28 17 34.0	2.333
23	17 32 29.33	2.2644	S. 28 19 49.7	2.192

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 34 45.21	2.2647	S. 28 21 57.0	2.051
1	17 37 1.10	2.2650	28 23 55.8	1.909
2	17 39 17.01	2.2652	28 25 46.0	1.767
3	17 41 32.93	2.2653	28 27 27.8	1.626
4	17 43 48.85	2.2653	28 29 1.1	1.484
5	17 46 4.77	2.2653	28 30 25.9	1.342
6	17 48 20.69	2.2652	28 31 42.1	1.200
7	17 50 36.60	2.2650	28 32 49.9	1.059
8	17 52 52.49	2.2647	28 33 49.2	0.917
9	17 55 8.36	2.2643	28 34 40.0	0.776
10	17 57 24.20	2.2639	28 35 22.3	0.635
11	17 59 40.02	2.2634	28 35 56.2	0.494
12	18 1 55.81	2.2628	28 36 21.6	0.352
13	18 4 11.56	2.2621	28 36 38.5	0.211
14	18 6 27.26	2.2613	28 36 46.9	− 0.070
15	18 8 42.91	2.2604	28 36 46.9	+ 0.070
16	18 10 58.51	2.2595	28 36 38.5	0.211
17	18 13 14.05	2.2586	28 36 21.6	0.352
18	18 15 29.54	2.2576	28 35 56.3	0.492
19	18 17 44.96	2.2564	28 35 22.6	0.632
20	18 20 0.30	2.2551	28 34 40.5	0.771
21	18 22 15.57	2.2538	28 33 50.1	0.910
22	18 24 30.76	2.2524	28 32 51.3	1.050
23	18 26 45.86	2.2510	28 31 44.1	1.190
24	18 29 0.88	2.2495	S. 28 30 28.5	1.329

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 25.					**FRIDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	18 29 0.88	2.2495	S.28 30 28.5	1.329	0	20 14 4.71	2.1112	S.24 54 48.1	7.455
1	18 31 15.80	2.2479	28 29 4.6	1.467	1	20 16 11.27	2.1076	24 47 17.4	7.568
2	18 33 30.62	2.2462	28 27 32.5	1.604	2	20 18 17.62	2.1040	24 39 39.9	7.681
3	18 35 45.34	2.2444	28 25 52.1	1.742	3	20 20 23.75	2.1003	24 31 55.7	7.792
4	18 37 59.95	2.2426	28 24 3.4	1.880	4	20 22 29.66	2.0966	24 24 4.8	7.903
5	18 40 14.45	2.2407	28 22 6.5	2.017	5	20 24 35.35	2.0929	24 16 7.3	8.014
6	18 42 28.84	2.2388	28 20 1.4	2.153	6	20 26 40.81	2.0892	24 8 3.1	8.124
7	18 44 43.11	2.2368	28 17 48.1	2.290	7	20 28 46.06	2.0856	23 59 52.4	8.233
8	18 46 57.25	2.2347	28 15 26.6	2.427	8	20 30 51.08	2.0819	23 51 35.2	8.342
9	18 49 11.27	2.2325	28 12 56.9	2.563	9	20 32 55.88	2.0782	23 43 11.4	8.450
10	18 51 25.15	2.2303	28 10 19.1	2.698	10	20 35 0.46	2.0745	23 34 41.2	8.557
11	18 53 38.90	2.2280	28 7 33.2	2.833	11	20 37 4.82	2.0709	23 26 4.6	8.663
12	18 55 52.51	2.2257	28 4 39.1	2.968	12	20 39 8.97	2.0673	23 17 21.7	8.768
13	18 58 5.98	2.2232	28 1 37.0	3.102	13	20 41 12.90	2.0637	23 8 32.4	8.873
14	19 0 19.30	2.2207	27 58 26.9	3.235	14	20 43 16.61	2.0600	22 59 36.9	8.978
15	19 2 32.47	2.2182	27 55 8.8	3.368	15	20 45 20.10	2.0563	22 50 35.1	9.082
16	19 4 45.49	2.2157	27 51 42.7	3.501	16	20 47 23.37	2.0527	22 41 27.1	9.184
17	19 6 58.35	2.2130	27 48 8.7	3.633	17	20 49 26.43	2.0492	22 32 13.0	9.287
18	19 9 11.05	2.2103	27 44 26.8	3.764	18	20 51 29.27	2.0456	22 22 52.7	9.389
19	19 11 23.59	2.2076	27 40 37.0	3.896	19	20 53 31.90	2.0420	22 13 26.3	9.490
20	19 13 35.96	2.2048	27 36 39.3	4.027	20	20 55 34.31	2.0384	22 3 53.9	9.589
21	19 15 48.17	2.2020	27 32 33.8	4.157	21	20 57 36.51	2.0349	21 54 15.6	9.688
22	19 18 0.20	2.1990	27 28 20.5	4.287	22	20 59 38.50	2.0314	21 44 31.3	9.787
23	19 20 12.05	2.1961	S.27 23 59.4	4.416	23	21 1 40.28	2.0280	S.21 34 41.1	9.885
	THURSDAY 26.					**SATURDAY 28.**			
0	19 22 23.73	2.1932	S.27 19 30.6	4.544	0	21 3 41.86	2.0246	S.21 24 45.1	9.982
1	19 24 35.23	2.1901	27 14 54.1	4.672	1	21 5 43.23	2.0211	21 14 43.3	10.079
2	19 26 46.54	2.1869	27 10 9.9	4.800	2	21 7 44.39	2.0177	21 4 35.6	10.176
3	19 28 57.66	2.1838	27 5 18.1	4.927	3	21 9 45.35	2.0143	20 54 22.2	10.270
4	19 31 8.60	2.1807	27 0 18.7	5.053	4	21 11 46.11	2.0110	20 44 3.2	10.364
5	19 33 19.35	2.1775	26 55 11.7	5.180	5	21 13 46.67	2.0076	20 33 38.5	10.458
6	19 35 29.90	2.1742	26 49 57.1	5.306	6	21 15 47.02	2.0043	20 23 8.2	10.552
7	19 37 40.25	2.1709	26 44 35.0	5.430	7	21 17 47.18	2.0011	20 12 32.3	10.644
8	19 39 50.41	2.1676	26 39 5.5	5.553	8	21 19 47.15	1.9978	20 1 50.9	10.735
9	19 42 0.37	2.1643	26 33 28.6	5.677	9	21 21 46.92	1.9946	19 51 4.1	10.826
10	19 44 10.13	2.1609	26 27 44.3	5.800	10	21 23 46.50	1.9915	19 40 11.8	10.917
11	19 46 19.68	2.1575	26 21 52.6	5.923	11	21 25 45.90	1.9884	19 29 14.1	11.006
12	19 48 29.03	2.1541	26 15 53.5	6.045	12	21 27 45.11	1.9853	19 18 11.1	11.094
13	19 50 38.17	2.1506	26 9 47.2	6.165	13	21 29 44.14	1.9822	19 7 2.8	11.182
14	19 52 47.10	2.1472	26 3 33.7	6.285	14	21 31 42.98	1.9792	18 55 49.2	11.270
15	19 54 55.83	2.1437	25 57 13.0	6.405	15	21 33 41.64	1.9762	18 44 30.4	11.356
16	19 57 4.34	2.1401	25 50 45.1	6.525	16	21 35 40.13	1.9733	18 33 6.5	11.442
17	19 59 12.64	2.1366	25 44 10.0	6.644	17	21 37 38.44	1.9704	18 21 37.4	11.528
18	20 1 20.73	2.1330	25 37 27.8	6.762	18	21 39 36.58	1.9676	18 10 3.2	11.613
19	20 3 28.60	2.1294	25 30 38.6	6.879	19	21 41 34.55	1.9648	17 58 23.9	11.696
20	20 5 36.26	2.1258	25 23 42.4	6.995	20	21 43 32.35	1.9620	17 46 39.7	11.779
21	20 7 43.70	2.1222	25 16 39.2	7.111	21	21 45 29.99	1.9594	17 34 50.5	11.861
22	20 9 50.93	2.1186	25 9 29.0	7.227	22	21 47 27.48	1.9567	17 22 56.4	11.942
23	20 11 57.93	2.1149	25 2 12.0	7.341	23	21 49 24.80	1.9540	17 10 57.4	12.023
24	20 14 4.71	2.1112	S.24 54 48.1	7.455	24	21 51 21.96	1.9514	S.16 58 53.6	12.103

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 51 21.96	1.9514	S. 16 58 53.6	12.103
1	21 53 18.97	1.9489	16 46 45.0	12.183
2	21 55 15.83	1.9465	16 34 31.7	12.262
3	21 57 12.55	1.9441	16 22 13.6	12.340
4	21 59 9.12	1.9417	16 9 50.9	12.417
5	22 1 5.55	1.9394	15 57 23.6	12.494
6	22 3 1.85	1.9372	15 44 51.7	12.570
7	22 4 58.01	1.9349	15 32 15.2	12.645
8	22 6 54.04	1.9328	15 19 34.3	12.718
9	22 8 49.95	1.9307	15 6 49.0	12.792
10	22 10 45.73	1.9287	14 53 59.3	12.865
11	22 12 41.39	1.9266	14 41 5.2	12.937
12	22 14 36.92	1.9246	14 28 6.8	13.008
13	22 16 32.34	1.9228	14 15 4.2	13.079
14	22 18 27.65	1.9210	14 1 57.3	13.150
15	22 20 22.86	1.9192	13 48 46.2	13.219
16	22 22 17.96	1.9175	13 35 31.0	13.288
17	22 24 12.96	1.9159	13 22 11.7	13.356
18	22 26 7.87	1.9144	13 8 48.3	13.423
19	22 28 2.69	1.9129	12 55 20.9	13.489
20	22 29 57.42	1.9114	12 41 49.6	13.554
21	22 31 52.06	1.9100	12 28 14.4	13.619
22	22 33 46.62	1.9087	12 14 35.3	13.684
23	22 35 41.11	1.9075	S. 12 0 52.3	13.747

MONDAY 30.

Hour	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 37 35.52	1.9063	S. 11 47 5.6	13.809
1	22 39 29.86	1.9052	11 33 15.2	13.871
2	22 41 24.14	1.9041	11 19 21.1	13.932
3	22 43 18.35	1.9030	11 5 23.3	13.993
4	22 45 12.50	1.9021	10 51 21.9	14.052
5	22 47 6.60	1.9013	10 37 17.0	14.111
6	22 49 0.66	1.9006	10 23 8.6	14.169
7	22 50 54.67	1.8998	10 8 56.7	14.226
8	22 52 48.64	1.8992	9 54 41.5	14.282
9	22 54 42.57	1.8986	9 40 22.9	14.337
10	22 56 36.47	1.8981	9 26 1.0	14.392
11	22 58 30.34	1.8976	9 11 35.8	14.447
12	23 0 24.18	1.8972	8 57 7.4	14.500
13	23 2 18.00	1.8969	8 42 35.8	14.552
14	23 4 11.81	1.8967	8 28 1.1	14.604
15	23 6 5.61	1.8966	8 13 23.3	14.655
16	23 7 59.40	1.8965	7 58 42.5	14.705
17	23 9 53.19	1.8965	7 43 58.7	14.753
18	23 11 46.98	1.8966	7 29 12.1	14.801
19	23 13 40.78	1.8967	7 14 22.6	14.849
20	23 15 34.59	1.8969	6 59 30.2	14.896
21	23 17 28.41	1.8972	6 44 35.1	14.941
22	23 19 22.25	1.8976	6 29 37.3	14.986
23	23 21 16.12	1.8981	6 14 36.8	15.031
24	23 23 10.02	1.8986	S. 5 59 33.6	15.075

TUESDAY, MAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 23 10.02	1.8986	S. 5 59 33.6	15.075

PHASES OF THE MOON.

		d	h	m
● New Moon	April	5	16	0.0
☽ First Quarter		12	12	32.5
○ Full Moon		19	15	1.6
☾ Last Quarter		27	15	20.6

		d	h
☾ Perigee	April	10	15.7
☾ Apogee		25	19.9

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Saturn	W.	113° 52′ 31″	2920	115° 24′ 24″	2909	116° 56′ 31″	2898	118° 28′ 52″	2888
	Antares	W.	67 50 55	2935	69 22 30	2924	70 54 19	2913	72 26 21	2901
	Sun	E.	55 29 16	3299	54 5 3	3287	52 40 36	3275	51 15 55	3263
2	Antares	W.	80 10 18	2841	81 43 53	2828	83 17 44	2815	84 51 52	2803
	α Aquilæ	W.	42 38 43	5309	43 31 44	5150	44 26 43	5007	45 23 33	4874
	Mars	W.	25 12 56	3147	26 40 9	3129	28 7 44	3110	29 35 41	3093
	Sun	E.	44 8 48	3198	42 42 36	3183	41 16 7	3169	39 49 21	3155
3	Antares	W.	92 46 49	2735	94 22 42	2722	95 58 53	2708	97 35 22	2695
	α Aquilæ	W.	50 32 32	4344	51 38 44	4259	52 46 15	4179	53 55 1	4106
	Mars	W.	37 0 41	3009	38 30 43	2993	40 1 5	2977	41 31 47	2961
	Sun	E.	32 31 12	3082	31 2 41	3068	29 33 52	3053	28 4 45	3039
4	α Aquilæ	W.	59 55 23	3800	61 10 25	3750	62 26 19	3703	63 43 3	3659
	Mars	W.	49 10 14	2883	50 42 54	2869	52 15 53	2854	53 49 11	2839
	Sun	E.	20 34 37	2965	19 3 41	2951	17 32 27	2937	16 0 55	2923
7	Sun	W.	17 7 47	2675	18 45 0	2667	20 22 24	2658	22 0 0	2651
	Pollux	E.	76 56 59	2359	75 12 25	2351	73 27 40	2344	71 42 45	2337
	Regulus	E.	113 40 46	2364	111 56 20	2357	110 11 43	2349	108 26 55	2342
8	Sun	W.	30 10 23	2618	31 48 53	2613	33 27 30	2608	35 6 14	2603
	Pollux	E.	62 55 46	2308	61 9 58	2302	59 24 2	2298	57 38 0	2294
	Regulus	E.	99 40 32	2312	97 54 50	2307	96 9 1	2302	94 23 5	2298
9	Sun	W.	43 21 20	2585	45 0 35	2583	46 39 53	2580	48 19 15	2579
	Pollux	E.	48 46 28	2278	46 59 56	2276	45 13 21	2274	43 26 44	2272
	Regulus	E.	85 32 0	2282	83 45 34	2279	81 59 4	2277	80 12 31	2276
10	Sun	W.	56 36 33	2574	58 16 4	2574	59 55 35	2573	61 35 7	2574
	Pollux	E.	34 33 12	2270	32 46 28	2270	30 59 44	2270	29 13 1	2272
	Regulus	E.	71 19 19	2272	69 32 38	2272	67 45 57	2272	65 59 16	2272
11	Sun	W.	69 52 32	2579	71 31 56	2580	73 11 18	2582	74 50 38	2584
	Jupiter	W.	30 6 4	2388	31 49 56	2384	33 33 53	2381	35 17 55	2380
	Aldebaran	W.	25 22 50	2630	27 1 4	2590	28 40 13	2557	30 20 7	2530
	Regulus	E.	57 6 9	2279	55 19 38	2280	53 33 9	2282	51 46 43	2285
	Spica	E.	111 6 3	2270	109 19 19	2272	107 32 38	2273	105 45 59	2275
12	Sun	W.	83 6 32	2596	84 45 32	2599	86 24 29	2602	88 3 21	2605
	Jupiter	W.	43 58 25	2379	45 42 30	2380	47 26 34	2381	49 10 36	2383
	Aldebaran	W.	38 47 5	2450	40 29 28	2442	42 12 3	2435	43 54 48	2429
	Regulus	E.	42 55 33	2300	41 9 33	2303	39 23 38	2307	37 37 48	2311
	Saturn	E.	95 51 9	2272	94 4 28	2274	92 17 51	2277	90 31 18	2281
	Spica	E.	96 53 29	2286	95 7 9	2289	93 20 53	2291	91 34 41	2295
13	Sun	W.	96 16 34	2623	97 54 58	2627	99 33 16	2631	101 11 29	2635
	Jupiter	W.	57 50 1	2395	59 33 43	2398	61 17 21	2401	63 0 54	2405
	Aldebaran	W.	52 30 13	2413	54 13 29	2412	55 56 46	2412	57 40 3	2412
	Saturn	E.	81 39 43	2297	79 53 39	2300	78 7 40	2304	76 21 47	2308
	Spica	E.	82 44 51	2311	80 59 8	2315	79 13 30	2318	77 27 57	2322

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	SATURN	W.	120° 1′ 26″	2877	121° 34′ 14″	2866	123° 7′ 17″	2854	124° 40′ 35″	2842
	Antares	W.	73 58 38	2890	75 31 10	2878	77 3 57	2866	78 36 59	2853
	SUN	E.	49 51 0	3250	48 25 50	3237	47 0 25	3224	45 34 44	3211
2	Antares	W.	86 26 16	2789	88 0 58	2776	89 35 57	2763	91 11 14	2749
	α Aquilæ	W.	46 22 9	4751	47 22 26	4638	48 24 18	4532	49 27 42	4435
	MARS	W.	31 3 59	3075	32 32 39	3059	34 1 39	3042	35 31 0	3026
	SUN	E.	38 22 18	3141	36 54 58	3126	35 27 20	3112	33 59 25	3097
3	Antares	W.	99 12 9	2681	100 49 15	2667	102 26 39	2654	104 4 21	2640
	α Aquilæ	W.	55 4 57	4037	56 16 0	3971	57 28 8	3912	58 41 16	3854
	MARS	W.	43 2 49	2945	44 34 11	2930	46 5 52	2914	47 37 53	2898
	SUN	E.	26 35 20	3024	25 5 37	3009	23 35 35	2994	22 5 15	2980
4	α Aquilæ	W.	65 0 34	3616	66 18 51	3577	67 37 50	3540	68 57 30	3506
	MARS	W.	55 22 48	2825	56 56 44	2810	58 30 59	2796	60 5 32	2782
	SUN	E.	14 29 5	2909	12 56 58	2896	11 24 34	2884	9 51 55	2873
7	SUN	W.	23 37 46	2643	25 15 42	2637	26 53 47	2630	28 32 1	2624
	Pollux	E.	69 57 39	2331	68 12 24	2324	66 27 0	2318	64 41 27	2313
	Regulus	E.	106 41 57	2335	104 56 49	2329	103 11 32	2323	101 26 6	2317
8	SUN	W.	36 45 5	2599	38 24 1	2595	40 3 3	2592	41 42 9	2588
	Pollux	E.	55 51 52	2290	54 5 38	2287	52 19 19	2284	50 32 56	2281
	Regulus	E.	92 37 2	2294	90 50 54	2290	89 4 40	2287	87 18 22	2285
9	SUN	W.	49 58 39	2577	51 38 5	2576	53 17 33	2574	54 57 3	2574
	Pollux	E.	41 40 4	2272	39 53 23	2270	38 6 40	2270	36 19 56	2270
	Regulus	E.	78 25 56	2274	76 39 19	2273	74 52 40	2272	73 6 0	2272
10	SUN	W.	63 14 38	2574	64 54 9	2575	66 33 38	2576	68 13 6	2577
	Pollux	E.	27 26 20	2273	25 39 41	2275	23 53 5	2277	22 6 31	2279
	Regulus	E.	64 12 36	2273	62 25 57	2274	60 39 19	2275	58 52 43	2277
11	SUN	W.	76 29 55	2586	78 9 9	2588	79 48 20	2591	81 27 28	2593
	JUPITER	W.	37 1 59	2378	38 46 5	2378	40 30 12	2378	42 14 19	2378
	Aldebaran	W.	32 0 38	2508	33 41 40	2489	35 23 8	2475	37 4 57	2461
	Regulus	E.	50 0 21	2287	48 14 2	2290	46 27 48	2293	44 41 38	2296
	Spica	E.	103 59 23	2277	102 12 49	2279	100 26 19	2281	98 39 52	2284
12	SUN	W.	89 42 9	2609	91 20 52	2612	92 59 31	2615	94 38 5	2619
	JUPITER	W.	50 54 35	2384	52 38 32	2387	54 22 25	2389	56 6 15	2392
	Aldebaran	W.	45 37 42	2424	47 20 43	2420	49 3 49	2417	50 46 59	2415
	Regulus	E.	35 52 5	2316	34 6 29	2321	32 21 0	2326	30 35 39	2332
	SATURN	E.	88 44 50	2283	86 58 26	2287	85 12 7	2290	83 25 53	2293
	Spica	E.	89 48 34	2298	88 2 31	2301	86 16 33	2304	84 30 39	2308
13	SUN	W.	102 49 37	2639	104 27 39	2643	106 5 35	2648	107 43 25	2652
	JUPITER	W.	64 44 22	2408	66 27 45	2412	68 11 3	2415	69 54 16	2419
	Aldebaran	W.	59 23 20	2413	61 6 36	2414	62 49 51	2416	64 33 3	2417
	SATURN	E.	74 35 59	2312	72 50 17	2317	71 4 42	2321	69 19 13	2325
	Spica	E.	75 42 30	2326	73 57 9	2330	72 11 53	2334	70 26 43	2339

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
14	SUN	W.	109° 21′ 9″	2657	110° 58′ 46″	2662	112° 36′ 17″	2667	114° 13′ 41″	2672
	JUPITER	W.	71 37 23	2424	73 20 24	2428	75 3 19	2432	76 46 8	2437
	Aldebaran	W.	66 16 13	2419	67 59 20	2422	69 42 23	2425	71 25 22	2429
	Pollux	W.	22 10 56	2351	23 55 41	2355	25 40 20	2359	27 24 54	2363
	SATURN	E.	67 33 50	2330	65 48 34	2335	64 3 25	2339	62 18 23	2344
	Spica	E.	68 41 40	2343	66 56 43	2347	65 11 52	2352	63 27 8	2357
15	JUPITER	W.	85 18 30	2462	87 0 37	2467	88 42 36	2473	90 24 27	2479
	Aldebaran	W.	79 59 1	2448	81 41 27	2453	83 23 47	2458	85 5 59	2463
	Pollux	W.	36 6 14	2385	37 50 10	2390	39 33 59	2396	41 17 40	2401
	SATURN	E.	53 35 6	2372	51 50 51	2378	50 6 44	2384	48 22 47	2391
	Spica	E.	54 45 13	2382	53 1 12	2387	51 17 19	2393	49 33 34	2398
	Antares	E.	100 38 45	2381	98 54 43	2386	97 10 48	2391	95 27 1	2396
16	Aldebaran	W.	93 35 2	2494	95 16 24	2500	96 57 37	2507	98 38 40	2515
	Pollux	W.	49 54 7	2431	51 36 58	2436	53 19 41	2443	55 2 15	2450
	SATURN	E.	39 45 28	2427	38 2 32	2436	36 19 48	2445	34 37 17	2454
	Spica	E.	40 56 54	2429	39 14 0	2436	37 31 16	2443	35 48 42	2449
	Antares	E.	86 50 13	2427	85 7 17	2434	83 24 31	2441	81 41 54	2448
17	Pollux	W.	63 32 37	2486	65 14 10	2493	66 55 33	2501	68 36 45	2509
	Regulus	W.	26 55 28	2512	28 36 24	2517	30 17 14	2522	31 57 56	2528
	Antares	E.	73 11 19	2484	71 29 43	2492	69 48 18	2499	68 7 4	2507
18	Pollux	W.	76 59 52	2552	78 39 53	2561	80 19 42	2570	81 59 18	2579
	Regulus	W.	40 19 10	2564	41 58 54	2573	43 38 26	2581	45 17 47	2589
	Antares	E.	59 43 46	2550	58 3 42	2559	56 23 51	2569	54 44 13	2577
19	Pollux	W.	90 14 5	2628	91 52 22	2638	93 30 26	2649	95 8 15	2658
	Regulus	W.	53 31 32	2635	55 9 39	2646	56 47 32	2655	58 25 12	2665
	Antares	E.	46 29 16	2626	44 50 57	2636	43 12 51	2647	41 35 0	2657
	α Aquilæ	E.	97 51 7	3468	96 30 7	3472	95 9 12	3478	93 48 23	3486
20	Regulus	W.	66 30 7	2717	68 6 24	2728	69 42 27	2738	71 18 16	2749
	Antares	E.	33 29 13	2710	31 52 46	2721	30 16 34	2732	28 40 36	2743
	α Aquilæ	E.	87 6 47	3539	85 47 6	3554	84 27 41	3568	83 8 32	3586
	MARS	E.	101 24 13	2960	99 53 10	2972	98 22 22	2983	96 51 48	2994
21	Regulus	W.	79 13 47	2804	80 48 10	2814	82 22 20	2825	83 56 16	2835
	SATURN	W.	27 6 31	2815	28 40 39	2821	30 14 39	2828	31 48 30	2835
	Spica	W.	25 10 32	2800	26 45 0	2811	28 19 14	2821	29 53 14	2831
	α Aquilæ	E.	76 37 43	3685	75 20 40	3709	74 4 2	3734	72 47 51	3761
	MARS	E.	89 22 31	3052	87 53 23	3063	86 24 28	3074	84 55 47	3086
	Fomalhaut	E.	102 36 20	3022	101 6 34	3030	99 36 58	3039	98 7 33	3047
22	Regulus	W.	91 42 29	2888	93 15 3	2898	94 47 25	2908	96 19 34	2918
	SATURN	W.	39 35 10	2878	41 7 57	2887	42 40 32	2895	44 12 57	2905
	Spica	W.	37 39 53	2883	39 12 33	2893	40 45 1	2903	42 17 16	2913
	α Aquilæ	E.	66 34 19	3916	65 21 15	3952	64 8 48	3990	62 56 59	4030
	MARS	E.	77 35 48	3141	76 8 28	3152	74 41 21	3163	73 14 27	3173
	Fomalhaut	E.	90 43 21	3096	89 15 7	3107	87 47 6	3117	86 19 17	3128
	VENUS	E.	106 10 48	3925	104 45 8	3936	103 19 41	3947	101 54 27	3957

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Sun	W.	115° 50′ 59″	2677	117° 28′ 10″	2683	119° 5′ 13″	2688	120° 42′ 9″	2694
	Jupiter	W.	78 28 50	2442	80 11 25	2446	81 53 54	2451	83 36 16	2457
	Aldebaran	W.	73 8 16	2431	74 51 6	2436	76 33 50	2439	78 16 29	2444
	Pollux	W.	29 9 22	2366	30 53 45	2371	32 38 1	2375	34 22 11	2380
	Saturn	E.	60 33 28	2350	58 48 41	2355	57 4 1	2360	55 19 29	2366
	Spica	E.	61 42 31	2361	59 58 0	2366	58 13 37	2371	56 29 21	2377
15	Jupiter	W.	92 6 10	2485	93 47 45	2491	95 29 11	2497	97 10 28	2503
	Aldebaran	W.	86 48 4	2469	88 30 1	2475	90 11 50	2481	91 53 30	2487
	Pollux	W.	43 1 14	2406	44 44 40	2412	46 27 57	2418	48 11 6	2424
	Saturn	E.	46 38 59	2398	44 55 21	2405	43 11 53	2412	41 28 35	2419
	Spica	E.	47 49 57	2404	46 6 28	2410	44 23 8	2417	42 39 57	2422
	Antares	E.	93 43 23	2403	91 59 53	2409	90 16 31	2415	88 33 18	2421
16	Aldebaran	W.	100 19 32	2522	102 0 14	2530	103 40 45	2539	105 21 4	2547
	Pollux	W.	56 44 39	2457	58 26 53	2463	60 8 58	2470	61 50 53	2478
	Saturn	E.	32 54 59	2465	31 12 56	2475	29 31 7	2486	27 49 34	2498
	Spica	E.	34 6 17	2456	32 24 2	2464	30 41 58	2471	29 0 4	2479
	Antares	E.	79 59 27	2455	78 17 10	2462	76 35 3	2469	74 53 6	2476
17	Pollux	W.	70 17 46	2517	71 58 35	2525	73 39 13	2534	75 19 39	2543
	Regulus	W.	33 38 30	2535	35 18 55	2542	36 59 10	2549	38 39 15	2556
	Antares	E.	66 26 1	2516	64 45 10	2524	63 4 30	2533	61 24 2	2541
18	Pollux	W.	83 38 42	2588	85 17 53	2599	86 56 50	2608	88 35 34	2618
	Regulus	W.	46 56 57	2598	48 35 55	2607	50 14 40	2617	51 53 12	2626
	Antares	E.	53 4 47	2587	51 25 34	2597	49 46 35	2607	48 7 49	2616
19	Pollux	W.	96 45 51	2669	98 23 13	2680	100 0 20	2690	101 37 13	2701
	Regulus	W.	60 2 39	2675	61 39 52	2686	63 16 51	2696	64 53 36	2707
	Antares	E.	39 57 22	2667	38 19 58	2678	36 42 49	2689	35 5 54	2699
	α Aquilæ	E.	92 27 43	3494	91 7 12	3503	89 46 51	3514	88 26 42	3526
20	Regulus	W.	72 53 51	2760	74 29 12	2771	76 4 18	2782	77 39 10	2793
	Antares	E.	27 4 53	2753	25 29 24	2764	23 54 9	2775	22 19 8	2786
	α Aquilæ	E.	81 49 42	3603	80 31 11	3622	79 13 0	3641	77 55 10	3663
	Mars	E.	95 21 28	3005	93 51 22	3018	92 21 31	3029	90 51 54	3040
21	Regulus	W.	85 29 58	2846	87 3 26	2856	88 36 41	2867	90 9 42	2878
	Saturn	W.	33 22 12	2844	34 55 43	2852	36 29 3	2861	38 2 12	2869
	Spica	W.	31 27 1	2842	33 0 34	2852	34 33 54	2863	36 7 0	2873
	α Aquilæ	E.	71 32 8	3789	70 16 54	3818	69 2 10	3849	67 47 58	3881
	Mars	E.	83 27 20	3097	81 59 7	3108	80 31 7	3119	79 3 21	3130
	Fomalhaut	E.	96 38 19	3057	95 9 17	3066	93 40 26	3076	92 11 47	3087
22	Regulus	W.	97 51 30	2927	99 23 14	2937	100 54 46	2946	102 26 6	2956
	Saturn	W.	45 45 10	2913	47 17 12	2921	48 49 4	2930	50 20 45	2939
	Spica	W.	43 49 18	2923	45 21 8	2931	46 52 47	2941	48 24 14	2950
	α Aquilæ	E.	61 45 49	4073	60 35 21	4118	59 25 37	4165	58 16 38	4216
	Mars	E.	71 47 46	3163	70 21 17	3193	68 55 0	3204	67 28 55	3213
	Fomalhaut	E.	84 51 41	3118	83 24 18	3149	81 57 8	3160	80 30 11	3172
	Venus	E.	100 29 25	3268	99 4 36	3278	97 39 59	3288	96 15 34	3299

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	**Saturn**	W.	51° 52′ 15″	2946	53° 23′ 35″	2954	54° 54′ 45″	2962	56° 25′ 45″	2969
	Spica	W.	49 55 29	2959	51 26 33	2967	52 57 27	2976	54 28 10	2984
	α Aquilæ	E.	57 8 27	4269	56 1 6	4327	54 54 38	4387	53 49 5	4452
	Mars	E.	66 3 1	3923	64 37 19	3931	63 11 47	3941	61 46 26	3948
	Fomalhaut	E.	79 3 28	3183	77 36 58	3193	76 10 41	3205	74 44 38	3216
	Venus	E.	94 51 21	3308	93 27 19	3318	92 3 28	3326	90 39 47	3336
	α Pegasi	E.	100 39 27	3265	99 14 34	3271	97 49 49	3277	96 25 11	3283
24	**Saturn**	W.	63 58 30	3004	65 28 38	3009	66 58 39	3016	68 28 32	3021
	Spica	W.	61 59 21	3020	63 29 9	3026	64 58 50	3032	66 28 23	3037
	α Aquilæ	E.	48 36 56	4850	47 38 1	4947	46 40 24	5053	45 44 10	5169
	Mars	E.	54 42 3	3288	53 17 37	3294	51 53 19	3300	50 29 8	3307
	Fomalhaut	E.	67 37 46	3275	66 13 5	3288	64 48 39	3300	63 24 27	3313
	Venus	E.	83 43 54	3376	82 21 10	3384	80 58 35	3390	79 36 7	3397
	α Pegasi	E.	89 23 51	3316	87 59 58	3323	86 36 13	3330	85 12 36	3337
25	**Saturn**	W.	75 56 30	3042	77 25 51	3044	78 55 9	3047	80 24 23	3050
	Spica	W.	73 54 38	3060	75 23 37	3062	76 52 33	3065	78 21 25	3067
	Antares	W.	28 0 35	3058	29 29 36	3062	30 58 32	3065	32 27 25	3067
	Mars	E.	43 29 53	3332	42 6 18	3335	40 42 47	3338	39 19 20	3342
	Fomalhaut	E.	56 27 15	3380	55 4 36	3396	53 42 15	3412	52 20 12	3428
	Venus	E.	72 45 26	3422	71 23 34	3425	70 1 46	3428	68 40 1	3431
	α Pegasi	E.	78 16 29	3372	76 53 40	3378	75 30 58	3385	74 8 24	3392
	Sun	E.	118 42 50	3432	117 21 10	3436	115 59 34	3438	114 38 1	3441
26	**Saturn**	W.	87 50 1	3055	89 19 6	3054	90 48 12	3054	92 17 18	3052
	Spica	W.	85 45 15	3073	87 13 58	3072	88 42 42	3072	90 11 26	3070
	Antares	W.	39 51 17	3072	41 20 1	3072	42 48 45	3071	44 17 30	3069
	Mars	E.	32 22 48	3351	30 59 35	3351	29 36 22	3351	28 13 10	3351
	Fomalhaut	E.	45 34 56	3527	44 15 2	3552	42 55 35	3578	41 36 37	3606
	Venus	E.	61 51 57	3438	60 30 24	3438	59 8 51	3438	57 47 17	3437
	α Pegasi	E.	67 17 37	3429	65 55 53	3437	64 34 18	3446	63 12 53	3454
	Sun	E.	107 50 50	3447	106 29 27	3446	105 8 3	3446	103 46 38	3444
27	Spica	W.	97 35 44	3056	99 4 47	3052	100 33 55	3047	102 3 9	3043
	Antares	W.	51 41 52	3056	53 10 56	3052	54 40 5	3047	56 9 19	3042
	Venus	E.	50 58 58	3423	49 37 8	3419	48 15 13	3415	46 53 13	3409
	α Pegasi	E.	56 28 21	3505	55 8 2	3516	53 47 56	3530	52 28 5	3545
	Sun	E.	96 58 57	3430	95 37 14	3424	94 15 25	3420	92 53 31	3414
28	Antares	W.	63 37 18	3009	65 7 19	3001	66 37 31	2993	68 7 53	2984
	Venus	E.	40 1 30	3375	38 38 45	3366	37 15 50	3358	35 52 45	3348
	α Pegasi	E.	45 53 26	3644	44 35 39	3670	43 18 20	3700	42 1 33	3734
	Sun	E.	86 2 14	3379	84 39 33	3371	83 16 43	3361	81 53 42	3351
29	Antares	W.	75 42 41	2933	77 14 18	2921	78 46 10	2910	80 18 16	2898
	Venus	E.	28 54 29	3295	27 30 12	3282	26 5 40	3270	24 40 54	3258
	Sun	E.	74 55 41	3297	73 31 26	3284	72 6 56	3272	70 42 12	3259
30	Antares	W.	88 2 51	2831	89 36 38	2817	91 10 44	2803	92 45 8	2788
	α Aquilæ	W.	47 20 54	4685	48 22 6	4581	49 24 47	4483	50 28 54	4391
	Sun	E.	63 34 29	3188	62 8 5	3173	60 41 23	3157	59 14 22	3142

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	Saturn	W.	57° 56′ 36″	2977	59° 27′ 17″	2984	60° 57′ 50″	2991	62° 28′ 14″	2997
	Spica	W.	55 58 43	2992	57 29 6	2999	58 59 20	3006	60 29 25	3014
	α Aquilæ	E.	52 44 30	4520	51 40 56	4595	50 38 27	4675	49 37 6	4759
	Mars	E.	60 21 14	3257	58 56 12	3265	57 31 20	3273	56 6 37	3281
	Fomalhaut	E.	73 18 48	3228	71 53 12	3239	70 27 49	3252	69 2 41	3263
	Venus	E.	89 16 17	3345	87 52 57	3353	86 29 47	3361	85 6 46	3369
	α Pegasi	E.	95 0 40	3289	93 36 16	3296	92 12 0	3303	90 47 52	3309
24	Saturn	W.	69 58 19	3026	71 28 0	3030	72 57 35	3034	74 27 5	3039
	Spica	W.	67 57 50	3043	69 27 10	3047	70 56 25	3052	72 25 34	3056
	α Aquilæ	E.	44 49 25	5294	43 56 13	5429	43 4 39	5578	42 14 49	5740
	Mars	E.	49 5 5	3313	47 41 8	3319	46 17 18	3323	44 53 33	3327
	Fomalhaut	E.	62 0 30	3325	60 36 48	3338	59 13 21	3352	57 50 10	3366
	Venus	E.	78 13 47	3402	76 51 33	3408	75 29 25	3413	74 7 23	3417
	α Pegasi	E.	83 49 7	3344	82 25 46	3350	81 2 32	3358	79 39 27	3364
25	Saturn	W.	81 53 34	3052	83 22 43	3053	84 51 50	3054	86 20 56	3055
	Spica	W.	79 50 15	3069	81 19 2	3070	82 47 48	3072	84 16 32	3073
	Antares	W.	33 56 15	3069	35 25 3	3070	36 53 49	3072	38 22 33	3072
	Mars	E.	37 55 57	3344	36 32 36	3346	35 9 18	3348	33 46 2	3350
	Fomalhaut	E.	50 58 27	3446	49 37 2	3464	48 15 58	3483	46 55 15	3505
	Venus	E.	67 18 20	3433	65 56 41	3436	64 35 5	3437	63 13 30	3438
	α Pegasi	E.	72 45 58	3399	71 23 40	3407	70 1 31	3414	68 39 30	3421
	Sun	E.	113 16 31	3444	111 55 4	3445	110 33 38	3446	109 12 14	3446
26	Saturn	W.	93 46 26	3051	95 15 36	3048	96 44 49	3046	98 14 5	3043
	Spica	W.	91 40 12	3069	93 9 0	3066	94 37 51	3064	96 6 45	3060
	Antares	W.	45 46 17	3068	47 15 6	3065	48 43 58	3063	50 12 53	3060
	Mars	E.	26 49 58	3351	25 26 46	3351	24 3 33	3350	22 40 19	3348
	Fomalhaut	E.	40 18 11	3640	39 0 20	3676	37 43 7	3715	36 26 36	3759
	Venus	E.	56 25 42	3435	55 4 5	3433	53 42 26	3431	52 20 44	3427
	α Pegasi	E.	61 51 37	3463	60 30 32	3472	59 9 37	3482	57 48 53	3493
	Sun	E.	102 25 11	3442	101 3 42	3440	99 42 11	3437	98 20 36	3433
27	Spica	W.	103 32 29	3037	105 1 56	3030	106 31 31	3024	108 1 14	3018
	Antares	W.	57 38 40	3036	59 8 8	3030	60 37 43	3024	62 7 26	3017
	Venus	E.	45 31 7	3403	44 8 54	3397	42 46 34	3390	41 24 6	3383
	α Pegasi	E.	51 8 31	3561	49 49 14	3578	48 30 16	3598	47 11 39	3620
	Sun	E.	91 31 30	3408	90 9 23	3401	88 47 8	3394	87 24 45	3387
28	Antares	W.	69 38 26	2974	71 9 11	2965	72 40 8	2954	74 11 18	2944
	Venus	E.	34 29 29	3338	33 6 2	3329	31 42 24	3318	30 18 33	3306
	α Pegasi	E.	40 45 22	3772	39 29 51	3816	38 15 5	3865	37 1 10	3921
	Sun	E.	80 30 30	3342	79 7 7	3331	77 43 31	3320	76 19 43	3308
29	Antares	W.	81 50 38	2885	83 23 16	2873	84 56 10	2859	86 29 22	2845
	Venus	E.	23 15 53	3244	21 50 36	3231	20 25 4	3217	18 59 15	3203
	Sun	E.	69 17 12	3245	67 51 56	3231	66 26 24	3217	65 0 35	3203
30	Antares	W.	94 19 52	2773	95 54 55	2757	97 30 19	2742	99 6 3	2726
	α Aquilæ	W.	51 34 23	4307	52 41 9	4227	53 49 10	4152	54 58 22	4081
	Sun	E.	57 47 3	3125	56 19 24	3110	54 51 26	3093	53 23 8	3076

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Tues.	1	2 34 32.74	9.551	N.15 9 29.0	+45.24	15 54.23	66.09	3 2.75	0.305
Wed.	2	2 38 22.22	9.574	15 27 27.2	44.61	15 53.99	66.17	3 9.80	0.282
Thur.	3	2 42 12.27	9.597	15 45 10.1	43.97	15 53.76	66.25	3 16.30	0.259
Frid.	4	2 46 2.87	9.620	16 2 37.4	+43.31	15 53.53	66.33	3 22.23	0.236
Sat.	5	2 49 54.04	9.644	16 19 48.8	42.65	15 53.30	66.41	3 27.60	0.212
SUN.	6	2 53 45.78	9.668	16 36 44.0	41.96	15 53.08	66.49	3 32.41	0.189
Mon.	7	2 57 38.08	9.691	16 53 22.5	+41.26	15 52.86	66.57	3 36.65	0.165
Tues.	8	3 1 30.95	9.714	17 9 44.1	40.55	15 52.64	66.65	3 40.33	0.141
Wed.	9	3 5 24.38	9.738	17 25 48.5	39.82	15 52.43	66.73	3 43.46	0.118
Thur.	10	3 9 18.36	9.761	17 41 35.3	+39.08	15 52.22	66.81	3 46.02	0.095
Frid.	11	3 13 12.91	9.784	17 57 4.3	38.33	15 52.02	66.90	3 48.02	0.072
Sat.	12	3 17 8.02	9.808	18 12 15.1	37.57	15 51.82	66.98	3 49.47	0.049
SUN.	13	3 21 3.68	9.831	18 27 7.6	+36.79	15 51.62	67.06	3 50.36	0.026
Mon.	14	3 24 59.90	9.854	18 41 41.3	36.00	15 51.42	67.14	3 50.70	0.003
Tues.	15	3 28 56.67	9.877	18 55 56.1	35.21	15 51.23	67.22	3 50.48	0.021
Wed.	16	3 32 54.00	9.900	19 9 51.6	+34.41	15 51.04	67.30	3 49.71	0.044
Thur.	17	3 36 51.89	9.923	19 23 27.7	33.59	15 50.85	67.38	3 48.38	0.067
Frid.	18	3 40 50.32	9.946	19 36 44.1	32.76	15 50.67	67.46	3 46.51	0.090
Sat.	19	3 44 49.31	9.969	19 49 40.6	+31.93	15 50.49	67.54	3 44.08	0.112
SUN.	20	3 48 48.85	9.992	20 2 16.8	31.08	15 50.30	67.62	3 41.12	0.135
Mon.	21	3 52 48.93	10.015	20 14 32.6	30.22	15 50.12	67.70	3 37.60	0.158
Tues.	22	3 56 49.55	10.037	20 26 27.7	+29.35	15 49.95	67.78	3 33.55	0.180
Wed.	23	4 0 50.71	10.059	20 38 1.9	28.48	15 49.77	67.85	3 28.96	0.202
Thur.	24	4 4 52.40	10.081	20 49 15.0	27.60	15 49.60	67.92	3 23.84	0.224
Frid.	25	4 8 54.62	10.103	21 0 6.7	+26.70	15 49.43	67.99	3 18.20	0.246
Sat.	26	4 12 57.35	10.124	21 10 36.8	25.79	15 49.27	68.06	3 12.04	0.267
SUN.	27	4 17 0.58	10.145	21 20 45.1	24.88	15 49.10	68.12	3 5.38	0.288
Mon.	28	4 21 4.31	10.165	21 30 31.3	+23.96	15 48.94	68.19	2 58.24	0.308
Tues.	29	4 25 8.52	10.185	21 39 55.3	23.03	15 48.79	68.25	2 50.61	0.328
Wed.	30	4 29 13.19	10.204	21 48 56.7	22.09	15 48.64	68.31	2 42.51	0.347
Thur.	31	4 33 18.31	10.222	21 57 35.5	21.14	15 48.49	68.37	2 33.98	0.365
Frid.	32	4 37 23.85	10.240	N.22 5 51.4	+20.18	15 48.35	68.43	2 25.02	0.382

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Tues.	1	2 34 33.22	9.551	N. 15 9 31.3	+45.24	3 2.77	0.305	2 37 35.99
Wed.	2	2 38 22.73	9.574	15 27 29.6	44.61	3 9.82	0.282	2 41 32.55
Thur.	3	2 42 12.79	9.597	15 45 12.6	43.96	3 16.31	0.259	2 45 29.10
Frid.	4	2 46 3.41	9.620	16 2 39.9	+43.30	3 22.25	0.236	2 49 25.66
Sat.	5	2 49 54.60	9.644	16 19 51.3	42.64	3 27.62	0.212	2 53 22.22
SUN.	6	2 53 46.35	9.668	16 36 46.5	41.95	3 32.42	0.189	2 57 18.77
Mon.	7	2 57 38.67	9.691	16 53 25.0	+41.25	3 36.66	0.165	3 1 15.33
Tues.	8	3 1 31.54	9.714	17 9 46.6	40.54	3 40.34	0.141	3 5 11.88
Wed.	9	3 5 24.98	9.738	17 25 51.0	39.81	3 43.46	0.118	3 9 8.44
Thur.	10	3 9 18.97	9.761	17 41 37.8	+39.07	3 46.03	0.095	3 13 5.00
Frid.	11	3 13 13.53	9.784	17 57 6.7	38.33	3 48.03	0.072	3 17 1.56
Sat.	12	3 17 8.64	9.808	18 12 17.6	37.57	3 49.47	0.049	3 20 58.11
SUN.	13	3 21 4.31	9.831	18 27 9.9	+36.79	3 50.36	0.026	3 24 54.67
Mon.	14	3 25 0.53	9.854	18 41 43.6	36.00	3 50.70	0.002	3 28 51.23
Tues.	15	3 28 57.30	9.877	18 55 58.4	35.21	3 50.48	0.021	3 32 47.78
Wed.	16	3 32 54.64	9.900	19 9 53.9	+34.41	3 49.70	0.044	3 36 44.34
Thur.	17	3 36 52.52	9.923	19 23 29.9	33.59	3 48.38	0.067	3 40 40.90
Frid.	18	3 40 50.95	9.946	19 36 46.2	32.76	3 46.50	0.090	3 44 37.45
Sat.	19	3 44 49.93	9.969	19 49 42.6	+31.93	3 44.08	0.112	3 48 34.01
SUN.	20	3 48 49.46	9.992	20 2 18.7	31.08	3 41.11	0.135	3 52 30.57
Mon.	21	3 52 49.53	10.015	20 14 34.4	30.22	3 37.59	0.158	3 56 27.13
Tues.	22	3 56 50.15	10.037	20 26 29.5	+29.35	3 33.54	0.180	4 0 23.68
Wed.	23	4 0 51.29	10.059	20 38 3.6	28.48	3 28.95	0.202	4 4 20.24
Thur.	24	4 4 52.98	10.081	20 49 16.6	27.60	3 23.82	0.224	4 8 16.80
Frid.	25	4 8 55.17	10.103	21 0 8.2	+26.70	3 18.19	0.246	4 12 13.36
Sat.	26	4 12 57.89	10.124	21 10 38.2	25.79	3 12.03	0.267	4 16 9.92
SUN.	27	4 17 1.11	10.144	21 20 46.4	24.88	3 5.37	0.288	4 20 6.47
Mon.	28	4 21 4.81	10.164	21 30 32.5	+23.96	2 58.22	0.308	4 24 3.03
Tues.	29	4 25 9.00	10.184	21 39 56.4	23.03	2 50.59	0.328	4 27 59.59
Wed.	30	4 29 13.65	10.203	21 48 57.8	22.09	2 42.50	0.347	4 31 56.15
Thur.	31	4 33 18.74	10.221	21 57 36.4	21.14	2 33.96	0.365	4 35 52.71
Frid.	32	4 37 24.26	10.239	N. 22 5 52.2	+20.18	2 25.00	0.382	4 39 49.27

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	THE SUN'S Diff. for 1 Hour.	THE SUN'S LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	121	41 4 27.3	4 14.4	145.50	− 0.31	0.0035218	+45.5	21 18 53.92
2	122	42 2 38.4	2 25.4	145.43	0.17	0.0036304	44.9	21 14 58.01
3	123	43 0 47.9	0 34.8	145.36	− 0.04	0.0037373	44.2	21 11 2.10
4	124	43 58 55.9	58 42.6	145.30	+ 0.08	0.0038424	+43.4	21 7 6.19
5	125	44 57 2.1	56 48.7	145.23	0.19	0.0039458	42.7	21 3 10.28
6	126	45 55 6.9	54 53.3	145.16	0.28	0.0040475	42.0	20 59 14.37
7	127	46 53 9.9	52 56.1	145.09	+ 0.34	0.0041473	+41.2	20 55 18.46
8	128	47 51 11.2	50 57.3	145.02	0.38	0.0042454	40.5	20 51 22.55
9	129	48 49 10.7	48 56.6	144.94	0.39	0.0043417	39.8	20 47 26.64
10	130	49 47 8.4	46 54.2	144.87	+ 0.36	0.0044364	+39.2	20 43 30.72
11	131	50 45 4.2	44 49.8	144.79	0.31	0.0045297	38.5	20 39 34.81
12	132	51 42 58.3	42 43.7	144.71	0.23	0.0046213	37.9	20 35 38.90
13	133	52 40 50.6	40 35.9	144.64	+ 0.13	0.0047115	+37.4	20 31 42.99
14	134	53 38 41.2	38 26.3	144.57	+ 0.01	0.0048006	36.9	20 27 47.08
15	135	54 36 30.0	36 15.0	144.50	− 0.12	0.0048885	36.4	20 23 51.17
16	136	55 34 17.2	34 2.0	144.43	− 0.25	0.0049752	+36.0	20 19 55.26
17	137	56 32 2.8	31 47.4	144.37	0.38	0.0050609	35.5	20 15 59.35
18	138	57 29 46.9	29 31.4	144.31	0.50	0.0051457	35.1	20 12 3.44
19	139	58 27 29.5	27 13.8	144.25	− 0.61	0.0052296	+34.8	20 8 7.52
20	140	59 25 10.7	24 54.8	144.19	0.69	0.0053126	34.4	20 4 11.61
21	141	60 22 50.7	22 34.6	144.14	0.74	0.0053946	33.9	20 0 15.70
22	142	61 20 29.6	20 13.4	144.09	− 0.77	0.0054755	+33.5	19 56 19.79
23	143	62 18 7.2	17 50.8	144.05	0.76	0.0055553	33.0	19 52 23.88
24	144	63 15 43.9	15 27.3	144.01	0.72	0.0056340	32.6	19 48 27.96
25	145	64 13 19.6	13 2.8	143.97	− 0.66	0.0057114	+32.0	19 44 32.05
26	146	65 10 54.4	10 37.4	143.93	0.57	0.0057875	31.3	19 40 36.14
27	147	66 8 28.3	8 11.2	143.89	0.46	0.0058619	30.6	19 36 40.23
28	148	67 6 1.3	5 44.0	143.86	− 0.34	0.0059346	+29.9	19 32 44.32
29	149	68 3 33.5	3 16.0	143.83	0.21	0.0060055	29.1	19 28 48.40
30	150	69 1 5.0	0 47.3	143.79	− 0.07	0.0060743	28.2	19 24 52.49
31	151	69 58 35.6	58 17.7	143.75	+ 0.05	0.0061409	27.3	19 20 56.58
32	152	70 56 5.2	55 47.2	143.72	+ 0.17	0.0062053	+26.4	19 17 0.67

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0ᵈ.0.

Diff. for 1 Hour, −9ˢ.8296. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 23.4	15 29.9	56 22.4	+1.92	56 46.0	+2.00	21 22.9	1.82	25.3
2	15 36.5	15 43.2	57 10.3	2.04	57 34.9	2.04	22 7.5	1.91	26.3
3	15 49.8	15 56.2	57 59.3	2.00	58 22.9	1.92	22 54.9	2.05	27.3
4	16 2.3	16 7.9	58 45.3	+1.79	59 5.8	+1.62	23 46.4	2.24	28.3
5	16 12.9	16 17.2	59 24.2	1.42	59 39.8	1.18	δ		29.3
6	16 20.6	16 23.2	59 52.5	0.93	60 2.0	0.65	0 43.1	2.47	0.9
7	16 24.9	16 25.7	60 8.1	+0.37	60 10.9	+0.10	1 44.7	2.65	1.9
8	16 25.5	16 24.6	60 10.4	−0.17	60 6.9	−0.41	2 49.6	2.73	2.9
9	16 22.9	16 20.5	60 0.6	0.63	59 51.9	0.82	3 54.7	2.67	3.9
10	16 17.5	16 14.1	59 41.0	−0.98	59 28.4	−1.10	4 56.8	2.49	4.9
11	16 10.3	16 6.2	59 14.5	1.20	58 59.5	1.28	5 53.9	2.27	5.9
12	16 1.9	15 57.5	58 43.7	1.33	58 27.5	1.36	6 46.1	2.08	6.9
13	15 53.0	15 48.5	58 11.1	−1.38	57 54.5	−1.38	7 34.1	1.93	7.9
14	15 44.1	15 39.6	57 38.1	1.37	57 21.7	1.35	8 19.3	1.84	8.9
15	15 35.2	15 30.9	57 5.6	1.33	56 49.8	1.30	9 3.1	1.82	9.9
16	15 26.7	15 22.6	56 34.3	−1.28	56 19.2	−1.26	9 46.9	1.84	10.9
17	15 18.5	15 14.6	56 4.4	1.22	55 50.0	1.18	10 31.8	1.90	11.9
18	15 10.9	15 7.2	55 36.2	1.13	55 22.9	1.08	11 18.5	1.99	12.9
19	15 3.8	15 0.5	55 10.2	−1.03	54 58.2	−0.96	12 7.4	2.08	13.9
20	14 57.5	14 54.7	54 47.1	0.88	54 37.0	0.80	12 58.3	2.15	14.9
21	14 52.3	14 50.2	54 28.0	0.70	54 20.3	0.58	13 50.5	2.18	15.9
22	14 48.5	14 47.2	54 14.0	−0.46	54 9.3	−0.32	14 42.5	2.14	16.9
23	14 46.4	14 46.1	54 6.3	−0.17	54 5.3	0.00	15 33.1	2.06	17.9
24	14 46.4	14 47.2	54 6.2	+0.17	54 9.4	+0.36	16 21.5	1.97	18.9
25	14 48.7	14 50.8	54 14.8	+0.55	54 22.6	+0.75	17 7.5	1.86	19.9
26	14 53.6	14 57.1	54 32.8	0.95	54 45.5	1.16	17 51.1	1.78	20.9
27	15 1.2	15 6.0	55 0.6	1.36	55 18.2	1.55	18 33.4	1.75	21.9
28	15 11.3	15 17.3	55 37.9	+1.73	55 59.8	+1.91	19 15.3	1.75	22.9
29	15 23.8	15 30.7	56 23.7	2.05	56 49.1	2.17	19 58.1	1.82	23.9
30	15 38.0	15 45.4	57 15.7	2.25	57 43.2	2.30	20 43.2	1.95	24.9
31	15 53.0	16 0.5	58 11.0	2.30	58 38.5	2.25	21 32.1	2.14	25.9
32	16 7.7	16 14.6	59 5.1	+2.16	59 30.3	+2.00	22 26.1	2.37	26.9

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 1.					THURSDAY 3.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 23 10.02	1.8986	S. 5 59 33.6	15.075	0	0 56 27.07	2.0208	N. 6 34 54.8	15.934
1	23 25 3.95	1.8992	5 44 27.8	15.117	1	0 58 28.46	2.0256	6 50 50.5	15.922
2	23 26 57.92	1.8998	5 29 19.6	15.157	2	1 0 30.14	2.0304	7 6 45.4	15.908
3	23 28 51.93	1.9006	5 14 9.0	15.197	3	1 2 32.11	2.0352	7 22 39.4	15.893
4	23 30 45.99	1.9015	4 58 56.0	15.237	4	1 4 34.37	2.0402	7 38 32.5	15.877
5	23 32 40.11	1.9024	4 43 40.6	15.276	5	1 6 36.93	2.0452	7 54 24.6	15.859
6	23 34 34.28	1.9033	4 28 22.9	15.313	6	1 8 39.79	2.0503	8 10 15.6	15.840
7	23 36 28.51	1.9044	4 13 3.0	15.350	7	1 10 42.96	2.0555	8 26 5.4	15.819
8	23 38 22.81	1.9056	3 57 40.9	15.386	8	1 12 46.45	2.0607	8 41 53.9	15.796
9	23 40 17.18	1.9068	3 42 16.7	15.421	9	1 14 50.25	2.0661	8 57 40.9	15.771
10	23 42 11.62	1.9081	3 26 50.4	15.455	10	1 16 54.38	2.0716	9 13 26.4	15.746
11	23 44 6.15	1.9096	3 11 22.1	15.487	11	1 18 58.84	2.0771	9 29 10.4	15.719
12	23 46 0.77	1.9111	2 55 51.9	15.519	12	1 21 3.63	2.0827	9 44 52.7	15.690
13	23 47 55.48	1.9126	2 40 19.8	15.550	13	1 23 8.76	2.0884	10 0 33.2	15.660
14	23 49 50.28	1.9142	2 24 45.9	15.581	14	1 25 14.24	2.0942	10 16 11.9	15.628
15	23 51 45.18	1.9159	2 9 10.1	15.611	15	1 27 20.07	2.1001	10 31 48.6	15.594
16	23 53 40.19	1.9177	1 53 32.6	15.638	16	1 29 26.25	2.1060	10 47 23.2	15.558
17	23 55 35.31	1.9197	1 37 53.5	15.665	17	1 31 32.79	2.1121	11 2 55.6	15.522
18	23 57 30.55	1.9217	1 22 12.8	15.691	18	1 33 39.70	2.1182	11 18 25.8	15.483
19	23 59 25.91	1.9237	1 6 30.6	15.716	19	1 35 46.98	2.1244	11 33 53.6	15.442
20	0 1 21.40	1.9258	0 50 46.9	15.740	20	1 37 54.63	2.1307	11 49 18.9	15.400
21	0 3 17.01	1.9280	0 35 1.8	15.763	21	1 40 2.66	2.1371	12 4 41.6	15.356
22	0 5 12.76	1.9303	0 19 15.3	15.785	22	1 42 11.08	2.1435	12 20 1.6	15.311
23	0 7 8.65	1.9327	S. 0 3 27.6	15.805	23	1 44 19.88	2.1499	N.12 35 18.9	15.264
	WEDNESDAY 2.					FRIDAY 4.			
0	0 9 4.69	1.9352	N. 0 12 21.3	15.825	0	1 46 29.07	2.1565	N.12 50 33.3	15.215
1	0 11 0.88	1.9378	0 28 11.4	15.843	1	1 48 38.66	2.1632	13 5 44.7	15.163
2	0 12 57.23	1.9405	0 44 2.5	15.860	2	1 50 48.66	2.1700	13 20 52.9	15.110
3	0 14 53.74	1.9433	0 59 54.6	15.877	3	1 52 59.06	2.1768	13 35 57.9	15.056
4	0 16 50.42	1.9461	1 15 47.7	15.892	4	1 55 9.87	2.1837	13 50 59.6	14.999
5	0 18 47.27	1.9489	1 31 41.7	15.905	5	1 57 21.10	2.1907	14 5 57.8	14.940
6	0 20 44.29	1.9518	1 47 36.4	15.919	6	1 59 32.76	2.1978	14 20 52.4	14.879
7	0 22 41.49	1.9550	2 3 31.9	15.931	7	2 1 44.84	2.2048	14 35 43.3	14.817
8	0 24 38.89	1.9582	2 19 28.1	15.941	8	2 3 57.34	2.2119	14 50 30.5	14.754
9	0 26 36.48	1.9615	2 35 24.8	15.949	9	2 6 10.27	2.2192	15 5 13.8	14.688
10	0 28 34.27	1.9648	2 51 22.0	15.957	10	2 8 23.64	2.2265	15 19 53.1	14.620
11	0 30 32.26	1.9682	3 7 19.7	15.965	11	2 10 37.45	2.2339	15 34 28.2	14.550
12	0 32 30.46	1.9717	3 23 17.8	15.971	12	2 12 51.71	2.2413	15 48 59.1	14.478
13	0 34 28.67	1.9754	3 39 16.2	15.974	13	2 15 6.41	2.2487	16 3 25.6	14.404
14	0 36 27.51	1.9791	3 55 14.7	15.977	14	2 17 21.56	2.2563	16 17 47.6	14.328
15	0 38 26.37	1 9829	4 11 13.4	15.979	15	2 19 37.17	2.2639	16 32 5.0	14.251
16	0 40 25.46	1.9868	4 27 12.2	15.979	16	2 21 53.23	2.2716	16 46 17.7	14.171
17	0 42 24.78	1.9908	4 43 10.9	15.978	17	2 24 9.76	2.2793	17 0 25.5	14.088
18	0 44 24.34	1.9948	4 59 9.5	15.976	18	2 26 26.75	2.2871	17 14 28.3	14.004
19	0 46 24.15	1.9989	5 15 8.0	15.972	19	2 28 44.21	2.2949	17 28 26.0	13.918
20	0 48 24.21	2.0032	5 31 6.2	15.967	20	2 31 2.14	2.3028	17 42 18.5	13.831
21	0 50 24.53	2.0075	5 47 4.0	15.960	21	2 33 20.54	2.3107	17 56 5.7	13.741
22	0 52 25.11	2.0119	6 3 1.4	15.953	22	2 35 39.42	2.3186	18 9 47.4	13.648
23	0 54 25.96	2.0163	6 18 58.4	15.945	23	2 37 58.77	2.3265	18 23 23.5	13.553
24	0 56 27.07	2.0208	N. 6 34 54.8	15.934	24	2 40 18.60	2.3346	N.18 36 53.8	13.457

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 5.					MONDAY 7.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 40 18.60	2.3346	N.18 36 53.8	13.457	0	4 41 32.05	2.6967	N.26 52 3.7	6.408
1	2 42 38.92	2.3427	18 50 18.3	13.359	1	4 44 14.02	2.7022	26 58 22.5	6.217
2	2 44 59.72	2.3507	19 3 36.9	13.259	2	4 46 56.32	2.7075	27 4 29.7	6.023
3	2 47 21.00	2.3588	19 16 49.4	13.157	3	4 49 38.92	2.7125	27 10 25.2	5.828
4	2 49 42.77	2.3669	19 29 55.7	13.052	4	4 52 21.82	2.7175	27 16 9.0	5.633
5	2 52 5.03	2.3751	19 42 55.6	12.944	5	4 55 5.02	2.7223	27 21 41.1	5.436
6	2 54 27.78	2.3833	19 55 49.0	12.835	6	4 57 48.50	2.7269	27 27 1.3	5.237
7	2 56 51.02	2.3915	20 8 35.8	12.724	7	5 0 32.25	2.7313	27 32 9.5	5.037
8	2 59 14.76	2.3997	20 21 15.9	12.611	8	5 3 16.26	2.7355	27 37 5.7	4.837
9	3 1 38.99	2.4079	20 33 49.1	12.496	9	5 6 0.51	2.7395	27 41 49.9	4.635
10	3 4 3.71	2.4162	20 46 15.4	12.378	10	5 8 45.00	2.7434	27 46 21.9	4.432
11	3 6 28.93	2.4244	20 58 34.5	12.258	11	5 11 29.72	2.7472	27 50 41.7	4.228
12	3 8 54.64	2.4327	21 10 46.4	12.137	12	5 14 14.66	2.7507	27 54 49.3	4.024
13	3 11 20.85	2.4409	21 22 51.0	12.013	13	5 16 59.80	2.7539	27 58 44.6	3.818
14	3 13 47.55	2.4491	21 34 48.0	11.886	14	5 19 45.13	2.7570	28 2 27.5	3.612
15	3 16 14.74	2.4573	21 46 37.3	11.757	15	5 22 30.64	2.7598	28 5 58.0	3.405
16	3 18 42.42	2.4655	21 58 18.9	11.628	16	5 25 16.31	2.7625	28 9 16.1	3.197
17	3 21 10.60	2.4737	22 9 52.7	11.497	17	5 28 2.14	2.7650	28 12 21.6	2.988
18	3 23 39.27	2.4819	22 21 18.5	11.362	18	5 30 48.11	2.7672	28 15 14.6	2.778
19	3 26 8.43	2.4900	22 32 36.1	11.224	19	5 33 34.21	2.7693	28 17 55.0	2.568
20	3 28 38.07	2.4981	22 43 45.4	11.086	20	5 36 20.43	2.7712	28 20 22.8	2.359
21	3 31 8.20	2.5062	22 54 46.4	10.945	21	5 39 6.75	2.7728	28 22 38.1	2.149
22	3 33 38.81	2.5143	23 5 38.8	10.802	22	5 41 53.16	2.7742	28 24 40.7	1.938
23	3 36 9.91	2.5223	N.23 16 22.6	10.657	23	5 44 39.65	2.7754	N.28 26 30.6	1.726
	SUNDAY 6.					TUESDAY 8.			
0	3 38 41.49	2.5303	N.23 26 57.7	10.511	0	5 47 26.21	2.7764	N.28 28 7.8	1.514
1	3 41 13.54	2.5382	23 37 23.9	10.361	1	5 50 12.82	2.7772	28 29 32.3	1.302
2	3 43 46.07	2.5461	23 47 41.0	10.209	2	5 52 59.47	2.7778	28 30 44.0	1.089
3	3 46 19.07	2.5538	23 57 49.0	10.056	3	5 55 46.15	2.7781	28 31 43.0	0.877
4	3 48 52.53	2.5616	24 7 47.7	9.901	4	5 58 32.84	2.7782	28 32 29.3	0.665
5	3 51 26.46	2.5693	24 17 37.1	9.744	5	6 1 19.53	2.7780	28 33 2.8	0.453
6	3 54 0.85	2.5769	24 27 17.0	9.585	6	6 4 6.20	2.7777	28 33 23.6	0.241
7	3 56 35.69	2.5844	24 36 47.3	9.423	7	6 6 52.85	2.7772	28 33 31.7	+ 0.028
8	3 59 10.98	2.5919	24 46 7.8	9.260	8	6 9 39.46	2.7764	28 33 27.0	− 0.184
9	4 1 46.72	2.5993	24 55 18.5	9.096	9	6 12 26.02	2.7754	28 33 9.6	0.396
10	4 4 22.90	2.6066	25 4 19.3	8.929	10	6 15 12.51	2.7742	28 32 39.5	0.608
11	4 6 59.51	2.6138	25 13 10.0	8.759	11	6 17 58.92	2.7728	28 31 56.7	0.819
12	4 9 36.56	2.6210	25 21 50.4	8.588	12	6 20 45.25	2.7712	28 31 1.2	1.030
13	4 12 14.03	2.6279	25 30 20.5	8.416	13	6 23 31.47	2.7693	28 29 53.1	1.240
14	4 14 51.91	2.6347	25 38 40.3	8.242	14	6 26 17.57	2.7673	28 28 32.4	1.451
15	4 17 30.20	2.6415	25 46 49.6	8.067	15	6 29 3.55	2.7651	28 26 59.0	1.661
16	4 20 8.89	2.6482	25 54 48.3	7.889	16	6 31 49.38	2.7626	28 25 13.1	1.869
17	4 22 47.98	2.6548	26 2 36.3	7.709	17	6 34 35.06	2.7599	28 23 14.7	2.077
18	4 25 27.46	2.6612	26 10 13.4	7.528	18	6 37 20.57	2.7571	28 21 3.9	2.284
19	4 28 7.32	2.6674	26 17 39.7	7.346	19	6 40 5.91	2.7540	28 18 40.6	2.491
20	4 30 47.55	2.6736	26 24 54.9	7.161	20	6 42 51.05	2.7507	28 16 4.9	2.697
21	4 33 28.15	2.6797	26 31 59.0	6.975	21	6 45 35.99	2.7473	28 13 16.9	2.903
22	4 36 9.11	2.6855	26 38 51.9	6.787	22	6 48 20.72	2.7436	28 10 16.6	3.108
23	4 38 50.41	2.6912	26 45 33.5	6.598	23	6 51 5.22	2.7397	28 7 4.0	3.312
24	4 41 32.05	2.6967	N.26 52 3.7	6.408	24	6 53 49.48	2.7357	N.28 3 39.2	3.514

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 9.					**FRIDAY 11.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	6 53 49.48	2.7357	N.28 3 39.2	3.514	0	8 57 54.30	2.4026	N.21 48 26.2	11.466
1	6 56 33.50	2.7315	28 0 2.3	3.716	1	9 0 18.21	2.3945	21 36 54.6	11.587
2	6 59 17.26	2.7271	27 56 13.3	3.916	2	9 2 41.64	2.3864	21 25 15.7	11.707
3	7 2 0.75	2.7225	27 52 12.4	4.114	3	9 5 4.58	2.3783	21 13 29.7	11.825
4	7 4 43.96	2.7177	27 47 59.6	4.312	4	9 7 27.04	2.3703	21 1 36.7	11.940
5	7 7 26.88	2.7128	27 43 34.9	4.510	5	9 9 49.02	2.3622	20 49 36.9	12.053
6	7 10 9.50	2.7077	27 38 58.4	4.706	6	9 12 10.51	2.3542	20 37 30.3	12.166
7	7 12 51.81	2.7025	27 34 10.2	4.900	7	9 14 31.53	2.3463	20 25 17.0	12.276
8	7 15 33.80	2.6972	27 29 10.4	5.093	8	9 16 52.07	2.3384	20 12 57.2	12.383
9	7 18 15.47	2.6917	27 23 59.0	5.286	9	9 19 12.14	2.3305	20 0 31.0	12.490
10	7 20 56.80	2.6859	27 18 36.1	5.477	10	9 21 31.73	2.3227	19 47 58.4	12.594
11	7 23 37.78	2.6800	27 13 1.8	5.665	11	9 23 50.86	2.3149	19 35 19.7	12.696
12	7 26 18.40	2.6740	27 7 16.3	5.852	12	9 26 9.52	2.3071	19 22 34.9	12.797
13	7 28 58.66	2.6679	27 1 19.6	6.038	13	9 28 27.71	2.2993	19 9 44.1	12.896
14	7 31 38.55	2.6617	26 55 11.7	6.224	14	9 30 45.44	2.2917	18 56 47.4	12.993
15	7 34 18.06	2.6553	26 48 52.7	6.407	15	9 33 2.72	2.2842	18 43 45.0	13.088
16	7 36 57.18	2.6488	26 42 22.8	6.589	16	9 35 19.55	2.2766	18 30 36.9	13.181
17	7 39 35.91	2.6422	26 35 42.0	6.769	17	9 37 35.92	2.2691	18 17 23.3	13.272
18	7 42 14.24	2.6354	26 28 50.5	6.947	18	9 39 51.84	2.2617	18 4 4.2	13.362
19	7 44 52.16	2.6286	26 21 48.3	7.124	19	9 42 7.32	2.2543	17 50 39.8	13.450
20	7 47 29.67	2.6217	26 14 35.6	7.299	20	9 44 22.36	2.2469	17 37 10.2	13.536
21	7 50 6.76	2.6147	26 7 12.4	7.473	21	9 46 36.95	2.2396	17 23 35.5	13.620
22	7 52 43.43	2.6075	25 59 38.8	7.645	22	9 48 51.11	2.2324	17 9 55.8	13.703
23	7 55 19.66	2.6002	N.25 51 55.0	7.815	23	9 51 4.84	2.2253	N.16 56 11.2	13.784
	THURSDAY 10.					**SATURDAY 12.**			
0	7 57 55.45	2.5928	N.25 44 1.0	7.983	0	9 53 18.15	2.2183	N.16 42 21.7	13.863
1	8 0 30.80	2.5854	25 35 57.0	8.150	1	9 55 31.04	2.2113	16 28 27.6	13.940
2	8 3 5.70	2.5780	25 27 43.0	8.315	2	9 57 43.50	2.2043	16 14 28.9	14.016
3	8 5 40.16	2.5705	25 19 19.2	8.477	3	9 59 55.55	2.1975	16 0 25.7	14.090
4	8 8 14.16	2.5629	25 10 45.7	8.638	4	10 2 7.20	2.1907	15 46 18.1	14.162
5	8 10 47.70	2.5552	25 2 2.6	8.798	5	10 4 18.44	2.1840	15 32 6.2	14.233
6	8 13 20.78	2.5474	24 53 10.0	8.956	6	10 6 29.28	2.1773	15 17 50.1	14.302
7	8 15 53.39	2.5396	24 44 7.9	9.111	7	10 8 39.72	2.1707	15 3 29.9	14.370
8	8 18 25.53	2.5318	24 34 56.6	9.264	8	10 10 49.77	2.1643	14 49 5.7	14.435
9	8 20 57.20	2.5238	24 25 36.2	9.416	9	10 12 59.44	2.1580	14 34 37.7	14.499
10	8 23 28.39	2.5158	24 16 6.7	9.567	10	10 15 8.73	2.1517	14 20 5.9	14.562
11	8 25 59.10	2.5079	24 6 28.2	9.715	11	10 17 17.64	2.1454	14 5 30.3	14.623
12	8 28 29.34	2.4999	23 56 40.9	9.862	12	10 19 26.18	2.1393	13 50 51.1	14.682
13	8 30 59.09	2.4918	23 46 44.8	10.006	13	10 21 34.35	2.1332	13 36 8.4	14.740
14	8 33 28.36	2.4838	23 36 40.2	10.148	14	10 23 42.16	2.1272	13 21 22.3	14.796
15	8 35 57.15	2.4757	23 26 27.1	10.288	15	10 25 49.61	2.1212	13 6 32.9	14.850
16	8 38 25.45	2.4676	23 16 5.6	10.427	16	10 27 56.71	2.1154	12 51 40.3	14.903
17	8 40 53.26	2.4595	23 5 35.9	10.563	17	10 30 3.46	2.1097	12 36 44.5	14.955
18	8 43 20.59	2.4514	22 54 58.0	10.698	18	10 32 9.87	2.1040	12 21 45.7	15.005
19	8 45 47.43	2.4432	22 44 12.1	10.831	19	10 34 15.94	2.0985	12 6 43.9	15.053
20	8 48 13.78	2.4351	22 33 18.3	10.962	20	10 36 21.69	2.0931	11 51 39.3	15.100
21	8 50 39.64	2.4269	22 22 16.7	11.091	21	10 38 27.11	2.0877	11 36 31.9	15.146
22	8 53 5.01	2.4188	22 11 7.4	11.218	22	10 40 32.21	2.0823	11 21 21.8	15.190
23	8 55 29.90	2.4107	21 59 50.5	11.343	23	10 42 36.99	2.0771	11 6 9.1	15.232
24	8 57 54.30	2.4026	N.21 48 26.2	11.466	24	10 44 41.46	2.0719	N.10 50 53.9	15.273

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 44 41.46	2.0719	N. 10 50 53.9	15.273
1	10 46 45.62	2.0669	10 35 36.3	15.313
2	10 48 49.49	2.0621	10 20 16.3	15.352
3	10 50 53.07	2.0572	10 4 54.1	15.388
4	10 52 56.36	2.0524	9 49 29.7	15.424
5	10 54 59.36	2.0477	9 34 3.2	15.458
6	10 57 2.08	2.0431	9 18 34.7	15.491
7	10 59 4.53	2.0387	9 3 4.3	15.522
8	11 1 6.72	2.0343	8 47 32.0	15.552
9	11 3 8.65	2.0300	8 31 58.0	15.580
10	11 5 10.32	2.0257	8 16 22.4	15.608
11	11 7 11.74	2.0216	8 0 45.1	15.634
12	11 9 12.91	2.0175	7 45 6.3	15.658
13	11 11 13.84	2.0136	7 29 26.1	15.682
14	11 13 14.54	2.0097	7 13 44.5	15.703
15	11 15 15.01	2.0060	6 58 1.7	15.723
16	11 17 15.26	2.0023	6 42 17.7	15.743
17	11 19 15.29	1.9987	6 26 32.5	15.762
18	11 21 15.11	1.9953	6 10 46.2	15.779
19	11 23 14.73	1.9919	5 54 59.0	15.794
20	11 25 14.14	1.9885	5 39 10.9	15.808
21	11 27 13.35	1.9853	5 23 22.0	15.822
22	11 29 12.37	1.9822	5 7 32.3	15.834
23	11 31 11.21	1.9792	N. 4 51 41.9	15.844

MONDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 33 9.87	1.9762	N. 4 35 51.0	15.853
1	11 35 8.36	1.9734	4 19 59.6	15.861
2	11 37 6.68	1.9706	4 4 7.7	15.869
3	11 39 4.83	1.9678	3 48 15.3	15.875
4	11 41 2.82	1.9653	3 32 22.7	15.879
5	11 43 0.67	1.9629	3 16 29.9	15.882
6	11 44 58.37	1.9605	3 0 36.9	15.884
7	11 46 55.93	1.9582	2 44 43.8	15.885
8	11 48 53.35	1.9559	2 28 50.7	15.885
9	11 50 50.64	1.9537	2 12 57.6	15.883
10	11 52 47.80	1.9517	1 57 4.7	15.881
11	11 54 44.84	1.9497	1 41 11.9	15.878
12	11 56 41.77	1.9479	1 25 19.3	15.874
13	11 58 38.59	1.9461	1 9 27.0	15.867
14	12 0 35.30	1.9443	0 53 35.2	15.859
15	12 2 31.91	1.9427	0 37 43.9	15.851
16	12 4 28.43	1.9412	0 21 53.1	15.842
17	12 6 24.86	1.9398	N. 0 6 2.8	15.832
18	12 8 21.21	1.9385	S. 0 9 46.8	15.820
19	12 10 17.48	1.9372	0 25 35.6	15.807
20	12 12 13.68	1.9360	0 41 23.7	15.794
21	12 14 9.80	1.9348	0 57 10.9	15.779
22	12 16 5.86	1.9338	1 12 57.2	15.763
23	12 18 1.86	1.9329	1 28 42.5	15.747
24	12 19 57.81	1.9321	S. 1 44 26.8	15.729

TUESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 19 57.81	1.9321	S. 1 44 26.8	15.729
1	12 21 53.71	1.9313	2 0 10.0	15.709
2	12 23 49.57	1.9306	2 15 51.9	15.688
3	12 25 45.39	1.9300	2 31 32.6	15.667
4	12 27 41.17	1.9295	2 47 12.0	15.645
5	12 29 36.93	1.9291	3 2 50.0	15.622
6	12 31 32.66	1.9287	3 18 26.6	15.597
7	12 33 28.37	1.9284	3 34 1.7	15.572
8	12 35 24.07	1.9282	3 49 35.2	15.545
9	12 37 19.76	1.9281	4 5 7.1	15.517
10	12 39 15.44	1.9281	4 20 37.3	15.489
11	12 41 11.13	1.9282	4 36 5.8	15.459
12	12 43 6.82	1.9283	4 51 32.4	15.428
13	12 45 2.52	1.9284	5 6 57.1	15.396
14	12 46 58.23	1.9287	5 22 19.9	15.363
15	12 48 53.96	1.9290	5 37 40.7	15.329
16	12 50 49.71	1.9294	5 52 59.4	15.294
17	12 52 45.49	1.9299	6 8 16.0	15.258
18	12 54 41.30	1.9305	6 23 30.4	15.221
19	12 56 37.15	1.9312	6 38 42.5	15.183
20	12 58 33.04	1.9318	6 53 52.3	15.144
21	13 0 28.97	1.9326	7 8 59.8	15.104
22	13 2 24.95	1.9335	7 24 4.8	15.063
23	13 4 20.99	1.9345	S. 7 39 7.3	15.021

WEDNESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 6 17.09	1.9355	S. 7 54 7.3	14.977
1	13 8 13.25	1.9365	8 9 4.6	14.933
2	13 10 9.47	1.9376	8 23 59.2	14.888
3	13 12 5.76	1.9388	8 38 51.1	14.842
4	13 14 2.13	1.9402	8 53 40.2	14.794
5	13 15 58.58	1.9415	9 8 26.4	14.746
6	13 17 55.11	1.9429	9 23 9.7	14.697
7	13 19 51.73	1.9444	9 37 50.0	14.646
8	13 21 48.44	1.9459	9 52 27.2	14.594
9	13 23 45.24	1.9475	10 7 1.3	14.542
10	13 25 42.14	1.9492	10 21 32.2	14.488
11	13 27 39.15	1.9510	10 35 59.9	14.434
12	13 29 36.26	1.9528	10 50 24.3	14.378
13	13 31 33.48	1.9547	11 4 45.3	14.322
14	13 33 30.82	1.9566	11 19 2.9	14.265
15	13 35 28.27	1.9585	11 33 17.1	14.207
16	13 37 25.84	1.9606	11 47 27.8	14.147
17	13 39 23.54	1.9627	12 1 31.8	14.086
18	13 41 21.36	1.9648	12 15 38.1	14.024
19	13 43 19.32	1.9671	12 29 37.7	13.962
20	13 45 17.41	1.9694	12 43 33.6	13.899
21	13 47 15.64	1.9717	12 57 25.6	13.834
22	13 49 14.01	1.9740	13 11 13.7	13.768
23	13 51 12.52	1.9764	13 24 57.8	13.702
24	13 53 11.18	1.9789	S. 13 38 37.9	13.634

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 53 11.18	1.9789	S. 13 38 37.9	13.634
1	13 55 9.99	1.9815	13 52 13.9	13.566
2	13 57 8.96	1.9841	14 5 45.8	13.497
3	13 59 8.08	1.9867	14 19 13.5	13.426
4	14 1 7.36	1.9894	14 32 36.9	13.354
5	14 3 6.81	1.9922	14 45 56.0	13.282
6	14 5 6.42	1.9949	14 59 10.8	13.209
7	14 7 6.20	1.9977	15 12 21.1	13.134
8	14 9 6.15	2.0006	15 25 26.9	13.058
9	14 11 6.27	2.0035	15 38 28.1	12.982
10	14 13 6.57	2.0065	15 51 24.7	12.905
11	14 15 7.05	2.0095	16 4 16.7	12.827
12	14 17 7.71	2.0125	16 17 3.9	12.747
13	14 19 8.55	2.0156	16 29 46.3	12.667
14	14 21 9.58	2.0187	16 42 23.9	12.585
15	14 23 10.80	2.0218	16 54 56.5	12.502
16	14 25 12.20	2.0250	17 7 24.1	12.419
17	14 27 13.80	2.0282	17 19 46.7	12.335
18	14 29 15.59	2.0315	17 32 4.3	12.250
19	14 31 17.58	2.0348	17 44 16.7	12.163
20	14 33 19.77	2.0381	17 56 23.9	12.076
21	14 35 22.15	2.0414	18 8 25.8	11.987
22	14 37 24.73	2.0447	18 20 22.4	11.898
23	14 39 27.52	2.0482	S. 18 32 13.6	11.807

FRIDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 41 30.52	2.0517	S. 18 43 59.3	11.716
1	14 43 33.72	2.0551	18 55 39.5	11.624
2	14 45 37.13	2.0586	19 7 14.2	11.532
3	14 47 40.75	2.0620	19 18 43.3	11.438
4	14 49 44.57	2.0655	19 30 6.7	11.343
5	14 51 48.61	2.0691	19 41 24.4	11.248
6	14 53 52.86	2.0726	19 52 36.4	11.151
7	14 55 57.32	2.0762	20 3 42.5	11.052
8	14 58 2.00	2.0797	20 14 42.7	10.953
9	15 0 6.89	2.0833	20 25 36.9	10.853
10	15 2 12.00	2.0869	20 36 25.1	10.753
11	15 4 17.32	2.0905	20 47 7.3	10.652
12	15 6 22.86	2.0941	20 57 43.4	10.550
13	15 8 28.62	2.0977	21 8 13.3	10.446
14	15 10 34.59	2.1013	21 18 36.9	10.342
15	15 12 40.78	2.1050	21 28 54.3	10.238
16	15 14 47.19	2.1086	21 39 5.4	10.132
17	15 16 53.81	2.1122	21 49 10.1	10.024
18	15 19 0.65	2.1158	21 59 8.3	9.916
19	15 21 7.71	2.1194	22 9 0.0	9.807
20	15 23 14.98	2.1230	22 18 45.2	9.698
21	15 25 22.47	2.1266	22 28 23.8	9.587
22	15 27 30.17	2.1302	22 37 55.7	9.476
23	15 29 38.09	2.1338	22 47 20.9	9.364
24	15 31 46.23	2.1374	S. 22 56 39.4	9.252

SATURDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 31 46.23	2.1374	S. 22 56 39.4	9.252
1	15 33 54.58	2.1409	23 5 51.1	9.138
2	15 36 3.14	2.1445	23 14 55.9	9.023
3	15 38 11.92	2.1481	23 23 53.8	8.908
4	15 40 20.91	2.1515	23 32 44.8	8.792
5	15 42 30.10	2.1549	23 41 28.8	8.674
6	15 44 39.50	2.1584	23 50 5.7	8.556
7	15 46 49.11	2.1618	23 58 35.5	8.438
8	15 48 58.92	2.1653	24 6 58.2	8.319
9	15 51 8.94	2.1687	24 15 13.8	8.199
10	15 53 19.16	2.1720	24 23 22.1	8.078
11	15 55 29.58	2.1753	24 31 23.1	7.956
12	15 57 40.20	2.1787	24 39 16.8	7.833
13	15 59 51.02	2.1819	24 47 3.1	7.710
14	16 2 2.03	2.1851	24 54 42.0	7.587
15	16 4 13.23	2.1883	25 2 13.5	7.462
16	16 6 24.62	2.1914	25 9 37.5	7.337
17	16 8 36.20	2.1945	25 16 53.9	7.211
18	16 10 47.96	2.1976	25 24 2.8	7.084
19	16 12 59.91	2.2006	25 31 4.0	6.957
20	16 15 12.03	2.2035	25 37 57.6	6.829
21	16 17 24.33	2.2064	25 44 43.5	6.701
22	16 19 36.80	2.2093	25 51 21.7	6.572
23	16 21 49.44	2.2121	S. 25 57 52.1	6.442

SUNDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 24 2.25	2.2148	S. 26 4 14.7	6.311
1	16 26 15.22	2.2175	26 10 29.4	6.180
2	16 28 28.35	2.2202	26 16 36.3	6.049
3	16 30 41.65	2.2229	26 22 35.3	5.917
4	16 32 55.10	2.2254	26 28 26.3	5.784
5	16 35 8.70	2.2278	26 34 9.3	5.651
6	16 37 22.44	2.2302	26 39 44.4	5.518
7	16 39 36.33	2.2326	26 45 11.4	5.383
8	16 41 50.35	2.2349	26 50 30.3	5.249
9	16 44 4.51	2.2371	26 55 41.2	5.114
10	16 46 18.80	2.2392	27 0 44.0	4.978
11	16 48 33.22	2.2413	27 5 38.6	4.842
12	16 50 47.76	2.2433	27 10 25.0	4.705
13	16 53 2.42	2.2452	27 15 3.2	4.568
14	16 55 17.19	2.2471	27 19 33.2	4.431
15	16 57 32.07	2.2489	27 23 55.0	4.294
16	16 59 47.06	2.2507	27 28 8.5	4.156
17	17 2 2.15	2.2523	27 32 13.7	4.017
18	17 4 17.33	2.2538	27 36 10.5	3.878
19	17 6 32.60	2.2553	27 39 59.0	3.739
20	17 8 47.96	2.2566	27 43 39.2	3.601
21	17 11 3.40	2.2579	27 47 11.1	3.462
22	17 13 18.91	2.2592	27 50 34.6	3.322
23	17 15 34.50	2.2604	27 53 49.7	3.181
24	17 17 50.16	2.2615	S. 27 56 56.3	3.040

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 17 50.16	2.2615	S.27 56 56.3	3.040
1	17 20 5.88	2.2624	27 59 54.5	2.900
2	17 22 21.65	2.2633	28 2 44.3	2.760
3	17 24 37.48	2.2642	28 5 25.7	2.619
4	17 26 53.36	2.2649	28 7 58.6	2.478
5	17 29 9.27	2.2655	28 10 23.1	2.337
6	17 31 25.22	2.2661	28 12 39.1	2.196
7	17 33 41.20	2.2666	28 14 46.6	2.054
8	17 35 57.21	2.2670	28 16 45.6	1.912
9	17 38 13.24	2.2672	28 18 36.1	1.771
10	17 40 29.28	2.2674	28 20 18.1	1.629
11	17 42 45.33	2.2676	28 21 51.6	1.488
12	17 45 1.39	2.2677	28 23 16.7	1.347
13	17 47 17.45	2.2676	28 24 33.3	1.205
14	17 49 33.50	2.2674	28 25 41.3	1.063
15	17 51 49.54	2.2672	28 26 40.8	0.921
16	17 54 5.56	2.2669	28 27 31.8	0.779
17	17 56 21.57	2.2666	28 28 14.3	0.638
18	17 58 37.55	2.2660	28 28 48.4	0.497
19	18 0 53.49	2.2654	28 29 14.0	0.356
20	18 3 9.40	2.2648	28 29 31.1	0.214
21	18 5 25.27	2.2641	28 29 39.7	− 0.073
22	18 7 41.09	2.2632	28 29 39.9	+ 0.068
23	18 9 56.86	2.2622	S.28 29 31.6	0.208

TUESDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 12 12.56	2.2612	S.28 29 14.9	0.348
1	18 14 28.20	2.2602	28 28 49.8	0.489
2	18 16 43.78	2.2590	28 28 16.2	0.630
3	18 18 59.28	2.2577	28 27 34.2	0.770
4	18 21 14.70	2.2563	28 26 43.8	0.909
5	18 23 30.04	2.2549	28 25 45.1	1.048
6	18 25 45.29	2.2534	28 24 38.0	1.187
7	18 28 0.45	2.2518	28 23 22.6	1.326
8	18 30 15.51	2.2501	28 21 58.9	1.465
9	18 32 30.46	2.2483	28 20 26.8	1.604
10	18 34 45.31	2.2465	28 18 46.4	1.742
11	18 37 0.04	2.2445	28 16 57.8	1.879
12	18 39 14.65	2.2425	28 15 1.0	2.016
13	18 41 29.14	2.2404	28 12 55.9	2.153
14	18 43 43.50	2.2383	28 10 42.6	2.289
15	18 45 57.74	2.2362	28 8 21.2	2.425
16	18 48 11.84	2.2338	28 5 51.6	2.561
17	18 50 25.80	2.2314	28 3 13.9	2.695
18	18 52 39.61	2.2290	28 0 28.2	2.829
19	18 54 53.28	2.2265	27 57 34.4	2.964
20	18 57 6.79	2.2238	27 54 32.5	3.098
21	18 59 20.14	2.2211	27 51 22.6	3.232
22	19 1 33.33	2.2184	27 48 4.7	3.364
23	19 3 46.35	2.2157	27 44 38.9	3.496
24	19 5 59.21	2.2128	S.27 41 5.2	3.628

WEDNESDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 5 59.21	2.2128	S.27 41 5.2	3.628
1	19 8 11.89	2.2099	27 37 23.6	3.759
2	19 10 24.40	2.2070	27 33 34.1	3.890
3	19 12 36.73	2.2039	27 29 36.8	4.020
4	19 14 48.87	2.2008	27 25 31.7	4.149
5	19 17 0.83	2.1977	27 21 18.9	4.278
6	19 19 12.60	2.1946	27 16 58.4	4.406
7	19 21 24.18	2.1913	27 12 30.2	4.534
8	19 23 35.56	2.1880	27 7 54.3	4.662
9	19 25 46.74	2.1847	27 3 10.8	4.788
10	19 27 57.72	2.1813	26 58 19.7	4.914
11	19 30 8.50	2.1779	26 53 21.1	5.039
12	19 32 19.07	2.1744	26 48 15.0	5.164
13	19 34 29.43	2.1709	26 43 1.4	5.288
14	19 36 39.58	2.1673	26 37 40.4	5.411
15	19 38 49.51	2.1637	26 32 12.1	5.534
16	19 40 59.22	2.1601	26 26 36.4	5.656
17	19 43 8.72	2.1565	26 20 53.4	5.777
18	19 45 18.00	2.1528	26 15 3.1	5.898
19	19 47 27.05	2.1490	26 9 5.6	6.018
20	19 49 35.88	2.1453	26 3 1.0	6.137
21	19 51 44.48	2.1415	25 56 49.2	6.256
22	19 53 52.86	2.1377	25 50 30.3	6.374
23	19 56 1.00	2.1338	S.25 44 4.4	6.491

THURSDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 58 8.91	2.1299	S.25 37 31.4	6.607
1	20 0 16.59	2.1260	25 30 51.5	6.722
2	20 2 24.03	2.1221	25 24 4.7	6.837
3	20 4 31.24	2.1182	25 17 11.0	6.952
4	20 6 38.21	2.1143	25 10 10.4	7.067
5	20 8 44.95	2.1103	25 3 3.0	7.180
6	20 10 51.45	2.1063	24 55 48.8	7.292
7	20 12 57.71	2.1023	24 48 27.9	7.403
8	20 15 3.73	2.0983	24 41 0.4	7.513
9	20 17 9.51	2.0943	24 33 26.3	7.623
10	20 19 15.05	2.0903	24 25 45.6	7.732
11	20 21 20.35	2.0862	24 17 58.4	7.841
12	20 23 25.40	2.0822	24 10 4.7	7.948
13	20 25 30.21	2.0782	24 2 4.6	8.055
14	20 27 34.78	2.0742	23 53 58.1	8.162
15	20 29 39.11	2.0702	23 45 45.2	8.267
16	20 31 43.20	2.0662	23 37 26.0	8.372
17	20 33 47.05	2.0621	23 29 0.5	8.477
18	20 35 50.65	2.0580	23 20 28.8	8.580
19	20 37 54.01	2.0540	23 11 50.9	8.682
20	20 39 57.13	2.0501	23 3 6.9	8.783
21	20 42 0.02	2.0462	22 54 16.9	8.884
22	20 44 2.67	2.0422	22 45 20.8	8.984
23	20 46 5.08	2.0382	22 36 18.8	9.083
24	20 48 7.25	2.0342	S.22 27 10.8	9.182

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 48 7.25	2.0349	S. 22 27 10.8	9.182
1	20 50 9.19	2.0303	22 17 56.9	9.280
2	20 52 10.89	2.0263	22 8 37.2	9.377
3	20 54 12.35	2.0224	21 59 11.6	9.474
4	20 56 13.58	2.0186	21 49 40.3	9.569
5	20 58 14.58	2.0147	21 40 3.3	9.664
6	21 0 15.34	2.0108	21 30 20.6	9.758
7	21 2 15.87	2.0070	21 20 32.3	9.852
8	21 4 16.18	2.0033	21 10 38.4	9.944
9	21 6 16.27	1.9996	21 0 39.0	10.036
10	21 8 16.13	1.9958	20 50 34.1	10.127
11	21 10 15.77	1.9921	20 40 23.8	10.217
12	21 12 15.18	1.9883	20 30 8.1	10.307
13	21 14 14.37	1.9847	20 19 47.0	10.396
14	21 16 13.35	1.9812	20 9 20.6	10.483
15	21 18 12.11	1.9776	19 58 49.0	10.570
16	21 20 10.66	1.9741	19 48 12.2	10.657
17	21 22 9.00	1.9705	19 37 30.1	10.744
18	21 24 7.12	1.9670	19 26 42.9	10.828
19	21 26 5.04	1.9636	19 15 50.7	10.912
20	21 28 2.76	1.9602	19 4 53.4	10.996
21	21 30 0.27	1.9568	18 53 51.1	11.079
22	21 31 57.58	1.9536	18 42 43.9	11.161
23	21 33 54.70	1.9504	S. 18 31 31.8	11.242

SATURDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 35 51.63	1.9472	S. 18 20 14.8	11.323
1	21 37 48.36	1.9439	18 8 53.0	11.403
2	21 39 44.90	1.9408	17 57 26.4	11.482
3	21 41 41.26	1.9377	17 45 55.1	11.561
4	21 43 37.43	1.9347	17 34 19.1	11.639
5	21 45 33.42	1.9317	17 22 38.5	11.716
6	21 47 29.23	1.9287	17 10 53.2	11.792
7	21 49 24.87	1.9258	16 59 3.4	11.867
8	21 51 20.33	1.9229	16 47 9.1	11.942
9	21 53 15.62	1.9202	16 35 10.3	12.017
10	21 55 10.75	1.9175	16 23 7.1	12.090
11	21 57 5.72	1.9148	16 10 59.5	12.163
12	21 59 0.53	1.9122	15 58 47.5	12.236
13	22 0 55.18	1.9096	15 46 31.2	12.307
14	22 2 49.68	1.9071	15 34 10.7	12.377
15	22 4 44.03	1.9047	15 21 46.0	12.447
16	22 6 38.24	1.9022	15 9 17.1	12.516
17	22 8 32.30	1.8998	14 56 44.1	12.585
18	22 10 26.22	1.8976	14 44 6.9	12.653
19	22 12 20.01	1.8954	14 31 25.7	12.720
20	22 14 13.67	1.8932	14 18 40.5	12.786
21	22 16 7.19	1.8910	14 5 51.4	12.852
22	22 18 0.59	1.8890	13 52 58.3	12.917
23	22 19 53.87	1.8870	13 40 1.4	12.981
24	22 21 47.03	1.8851	S. 13 27 0.6	13.045

SUNDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 21 47.03	1.8851	S. 13 27 0.6	13.045
1	22 23 40.08	1.8832	13 13 56.0	13.107
2	22 25 33.02	1.8814	13 0 47.7	13.169
3	22 27 25.85	1.8797	12 47 35.7	13.231
4	22 29 18.58	1.8781	12 34 20.0	13.292
5	22 31 11.22	1.8765	12 21 0.7	13.352
6	22 33 3.76	1.8749	12 7 37.7	13.412
7	22 34 56.21	1.8735	11 54 11.2	13.471
8	22 36 48.58	1.8722	11 40 41.2	13.528
9	22 38 40.87	1.8708	11 27 7.8	13.585
10	22 40 33.08	1.8695	11 13 31.0	13.642
11	22 42 25.21	1.8683	10 59 50.8	13.698
12	22 44 17.27	1.8672	10 46 7.2	13.754
13	22 46 9.27	1.8662	10 32 20.3	13.808
14	22 48 1.21	1.8652	10 18 30.2	13.861
15	22 49 53.09	1.8642	10 4 37.0	13.914
16	22 51 44.92	1.8634	9 50 40.6	13.967
17	22 53 36.70	1.8627	9 36 41.0	14.019
18	22 55 28.44	1.8620	9 22 38.3	14.070
19	22 57 20.14	1.8614	9 8 32.6	14.120
20	22 59 11.81	1.8609	8 54 23.9	14.169
21	23 1 3.45	1.8604	8 40 12.3	14.218
22	23 2 55.06	1.8600	8 25 57.8	14.266
23	23 4 46.65	1.8597	S. 8 11 40.4	14.313

MONDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 6 38.23	1.8595	S. 7 57 20.2	14.360
1	23 8 29.79	1.8593	7 42 57.2	14.406
2	23 10 21.35	1.8593	7 28 31.5	14.451
3	23 12 12.91	1.8593	7 14 3.1	14.496
4	23 14 4.47	1.8594	6 59 32.0	14.539
5	23 15 56.04	1.8595	6 44 58.4	14.582
6	23 17 47.61	1.8597	6 30 22.2	14.624
7	23 19 39.20	1.8601	6 15 43.5	14.666
8	23 21 30.82	1.8605	6 1 2.3	14.707
9	23 23 22.46	1.8609	5 46 18.7	14.746
10	23 25 14.13	1.8615	5 31 32.8	14.785
11	23 27 5.84	1.8622	5 16 44.5	14.824
12	23 28 57.59	1.8629	5 1 53.9	14.862
13	23 30 49.39	1.8637	4 47 1.1	14.898
14	23 32 41.24	1.8646	4 32 6.1	14.934
15	23 34 33.14	1.8655	4 17 9.0	14.969
16	23 36 25.10	1.8666	4 2 9.8	15.003
17	23 38 17.13	1.8678	3 47 8.6	15.037
18	23 40 9.24	1.8691	3 32 5.3	15.071
19	23 42 1.42	1.8704	3 17 0.1	15.103
20	23 43 53.68	1.8717	3 1 53.0	15.133
21	23 45 46.03	1.8732	2 46 44.1	15.163
22	23 47 38.47	1.8747	2 31 33.4	15.192
23	23 49 31.00	1.8763	2 16 21.0	15.221
24	23 51 23.63	1.8781	S. 2 1 6.9	15.249

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 51 23.63	1.8781	S. 2 1 6.9	15.249
1	23 53 16.37	1.8800	1 45 51.1	15.276
2	23 55 9.23	1.8819	1 30 33.8	15.302
3	23 57 2.20	1.8839	1 15 14.9	15.328
4	23 58 55.30	1.8861	0 59 54.5	15.352
5	0 0 48.53	1.8883	0 44 32.7	15.374
6	0 2 41.89	1.8905	0 29 9.6	15.396
7	0 4 35.39	1.8929	S. 0 13 45.2	15.418
8	0 6 29.04	1.8953	N. 0 1 40.5	15.439
9	0 8 22.83	1.8978	0 17 7.5	15.459
10	0 10 16.78	1.9005	0 32 35.6	15.477
11	0 12 10.89	1.9032	0 48 4.8	15.495
12	0 14 5.17	1.9061	1 3 35.0	15.511
13	0 15 59.62	1.9090	1 19 6.1	15.527
14	0 17 54.25	1.9120	1 34 38.2	15.542
15	0 19 49.06	1.9151	1 50 11.1	15.555
16	0 21 44.06	1.9183	2 5 44.8	15.568
17	0 23 39.26	1.9217	2 21 19.3	15.580
18	0 25 34.66	1.9250	2 36 54.4	15.590
19	0 27 30.26	1.9284	2 52 30.1	15.600
20	0 29 26.07	1.9320	3 8 6.4	15.608
21	0 31 22.10	1.9357	3 23 43.1	15.615
22	0 33 18.35	1.9394	3 39 20.2	15.622
23	0 35 14.83	1.9433	N. 3 54 57.7	15.627

WEDNESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 37 11.55	1.9473	N. 4 10 35.4	15.630
1	0 39 8.51	1.9513	4 26 13.3	15.633
2	0 41 5.71	1.9554	4 41 51.4	15.636
3	0 43 3.16	1.9597	4 57 29.6	15.636
4	0 45 0.87	1.9640	5 13 7.7	15.635
5	0 46 58.84	1.9684	5 28 45.8	15.633
6	0 48 57.08	1.9729	5 44 23.7	15.630
7	0 50 55.59	1.9776	6 0 1.4	15.626
8	0 52 54.39	1.9823	6 15 38.8	15.621
9	0 54 53.47	1.9671	6 31 15.9	15.614
10	0 56 52.84	1.9920	6 46 52.5	15.605
11	0 58 52.51	1.9970	7 2 28.5	15.596
12	1 0 52.48	2.0021	7 18 4.0	15.586
13	1 2 52.76	2.0073	7 33 38.8	15.573
14	1 4 53.35	2.0126	7 49 12.8	15.560
15	1 6 54.27	2.0181	8 4 46.0	15.546
16	1 8 55.52	2.0235	8 20 18.3	15.529
17	1 10 57.09	2.0290	8 35 49.5	15.511
18	1 12 59.00	2.0347	8 51 19.6	15.492
19	1 15 1.26	2.0405	9 6 48.6	15.472
20	1 17 3.86	2.0463	9 22 16.3	15.450
21	1 19 6.82	2.0523	9 37 42.6	15.427
22	1 21 10.14	2.0584	9 53 7.5	15.403
23	1 23 13.83	2.0646	10 8 30.9	15.377
24	1 25 17.90	2.0709	N.10 23 52.7	15.349

THURSDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 25 17.90	2.0709	N.10 23 52.7	15.349
1	1 27 22.34	2.0772	10 39 12.8	15.319
2	1 29 27.16	2.0837	10 54 31.0	15.287
3	1 31 32.38	2.0902	11 9 47.3	15.255
4	1 33 37.99	2.0967	11 25 1.6	15.222
5	1 35 43.99	2.1034	11 40 13.9	15.186
6	1 37 50.40	2.1102	11 55 23.9	15.148
7	1 39 57.22	2.1172	12 10 31.6	15.109
8	1 42 4.46	2.1242	12 25 37.0	15.069
9	1 44 12.12	2.1312	12 40 39.9	15.027
10	1 46 20.21	2.1384	12 55 40.2	14.983
11	1 48 28.73	2.1457	13 10 37.7	14.935
12	1 50 37.69	2.1531	13 25 32.4	14[illegible]87
13	1 52 47.10	2.1605	13 40 24.2	14.838
14	1 54 56.95	2.1679	13 55 13.0	14.787
15	1 57 7.25	2.1755	14 9 58.7	14.734
16	1 59 18.01	2.1832	14 24 41.1	14.679
17	2 1 29.24	2.1910	14 39 20.2	14.622
18	2 3 40.93	2.1988	14 53 55.8	14.564
19	2 5 53.09	2.2068	15 8 27.9	14.503
20	2 8 5.74	2.2148	15 22 56.2	14.440
21	2 10 18.87	2.2229	15 37 20.7	14.376
22	2 12 32.49	2.2311	15 51 41.3	14.310
23	2 14 46.60	2.2393	N.16 5 57.9	14.242

FRIDAY, JUNE 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 17 1.20	2.2475	N.16 20 10.4	14.172

PHASES OF THE MOON.

		d	h	m
● New Moon . .	May	5	2	41.9
☽ First Quarter . . .		11	18	21.1
○ Full Moon		19	4	42.9
☾ Last Quarter		27	8	4.3

		d	h
☾ Perigee	May	7	16.1
☾ Apogee		23	12.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	α Aquilæ	W.	56° 8′ 42″	4015	57° 20′ 7″	3951	58° 32′ 35″	3892	59° 46′ 3″	3836
	Mars	W.	25 7 21	2971	26 38 10	2953	28 9 22	2934	29 40 58	2916
	Sun	E.	51 54 29	3060	50 25 30	3043	48 56 10	3026	47 26 29	3009
2	α Aquilæ	W.	66 6 57	3596	67 25 36	3555	68 44 59	3516	70 5 5	3479
	Mars	W.	37 24 49	2824	38 58 46	2806	40 33 6	2788	42 7 49	2770
	Fomalhaut	W.	35 31 2	3264	36 55 56	3197	38 22 9	3135	39 49 36	3079
	Sun	E.	39 52 47	2924	38 20 58	2907	36 48 48	2890	35 16 16	2874
3	α Aquilæ	W.	76 55 19	3321	78 19 6	3295	79 43 23	3270	81 8 9	3247
	Mars	W.	50 7 16	2684	51 44 18	2666	53 21 43	2650	54 59 30	2633
	Fomalhaut	W.	47 22 31	2855	48 55 48	2819	50 29 51	2785	52 4 39	2753
	Sun	E.	27 28 33	2798	25 54 3	2785	24 19 15	2772	22 44 11	2762
6	Sun	W.	12 33 46	2582	14 13 6	2553	15 53 6	2530	17 33 38	2512
	Pollux	E.	53 41 50	2174	51 52 43	2168	50 3 27	2163	48 14 3	2159
	Regulus	E.	90 26 54	2176	88 37 51	2171	86 48 40	2165	84 59 20	2161
7	Sun	W.	26 0 59	2465	27 43 1	2461	29 25 9	2457	31 7 23	2455
	Pollux	E.	39 5 41	2144	37 15 49	2143	35 25 56	2143	33 36 2	2143
	Regulus	E.	75 51 15	2146	74 1 26	2145	72 11 35	2144	70 21 43	2143
8	Sun	W.	39 39 2	2454	41 21 20	2455	43 3 36	2458	44 45 49	2461
	Jupiter	W.	20 20 17	2333	22 5 28	2320	23 50 59	2309	25 36 46	2301
	Regulus	E.	61 12 33	2151	59 22 51	2153	57 33 13	2157	55 43 40	2161
9	Sun	W.	53 15 32	2483	54 57 9	2489	56 38 37	2496	58 19 56	2502
	Jupiter	W.	34 27 28	2291	36 13 40	2294	37 59 49	2296	39 45 54	2300
	Regulus	E.	46 37 37	2186	44 48 49	2193	43 0 11	2200	41 11 43	2208
	Saturn	E.	97 38 52	2166	95 49 33	2172	94 0 23	2178	92 11 22	2184
10	Sun	W.	66 44 3	2540	68 24 20	2549	70 4 25	2558	71 44 18	2567
	Jupiter	W.	48 34 38	2326	50 19 57	2334	52 5 7	2342	53 50 6	2349
	Saturn	E.	83 8 52	2221	81 20 56	2229	79 33 12	2237	77 45 40	2246
	Spica	E.	86 8 37	2231	84 20 55	2239	82 33 26	2247	80 46 9	2256
11	Sun	W.	80 0 32	2615	81 39 7	2624	83 17 29	2635	84 55 37	2645
	Jupiter	W.	62 32 10	2391	64 15 58	2399	65 59 34	2408	67 42 57	2418
	Saturn	E.	68 51 18	2291	67 5 6	2302	65 19 9	2311	63 33 26	2321
	Spica	E.	71 52 55	2300	70 6 56	2310	68 21 11	2319	66 35 39	2328
12	Sun	W.	93 2 47	2697	94 39 31	2707	96 16 1	2718	97 52 17	2729
	Jupiter	W.	76 16 29	2465	77 58 31	2475	79 40 19	2485	81 21 53	2494
	Pollux	W.	33 0 27	2382	34 44 28	2391	36 28 15	2401	38 11 49	2410
	Saturn	E.	54 48 26	2371	53 4 10	2382	51 20 9	2392	49 36 23	2403
	Spica	E.	57 51 30	2377	56 7 22	2387	54 23 29	2396	52 39 49	2407
13	Sun	W.	105 50 2	2782	107 24 53	2794	108 59 29	2804	110 33 52	2815
	Pollux	W.	46 46 14	2458	48 28 26	2467	50 10 25	2477	51 52 11	2487
	Saturn	E.	41 1 23	2458	39 19 10	2469	37 37 13	2480	35 55 32	2492
	Spica	E.	44 5 3	2456	42 22 48	2465	40 40 46	2475	38 58 58	2485
	Antares	E.	89 58 41	2455	88 16 24	2465	86 34 21	2474	84 52 31	2484

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	α Aquilæ	W.	61° 0′ 28″	3763	62° 15′ 48″	3732	63° 32′ 1″	3684	64° 49′ 5″	3639
	Mars	W.	31 12 57	2697	32 45 20	2679	34 18 6	2660	35 51 16	2642
	Sun	E.	45 56 28	2992	44 26 5	2975	42 55 21	2958	41 24 15	2940
2	α Aquilæ	W.	71 25 53	3444	72 47 20	3411	74 9 24	3379	75 32 4	3349
	Mars	W.	43 42 56	2753	45 18 26	2735	46 54 20	2717	48 30 37	2701
	Fomalhaut	W.	41 18 11	3027	42 47 50	2979	44 18 29	2935	45 50 4	2894
	Sun	E.	33 43 24	2858	32 10 11	2842	30 36 38	2827	29 2 45	2812
3	α Aquilæ	W.	82 33 23	3225	83 59 2	3205	85 25 5	3187	86 51 30	3169
	Mars	W.	56 37 40	2618	58 16 11	2602	59 55 3	2587	61 34 16	2572
	Fomalhaut	W.	53 40 9	2722	55 16 19	2695	56 53 6	2668	58 30 29	2642
	Sun	E.	21 8 53	2752	19 33 22	2745	17 57 42	2741	16 21 56	2739
6	**Sun**	W.	19 14 35	2498	20 55 51	2487	22 37 22	2479	24 19 5	2471
	Pollux	E.	46 24 33	2155	44 34 57	2151	42 45 16	2148	40 55 30	2146
	Regulus	E.	83 9 54	2157	81 20 22	2153	79 30 44	2150	77 41 1	2148
7	**Sun**	W.	32 49 40	2453	34 32 0	2452	36 14 21	2452	37 56 42	2453
	Pollux	E.	31 46 9	2144	29 56 17	2145	28 6 27	2147	26 16 40	2150
	Regulus	E.	68 31 50	2144	66 41 58	2145	64 52 7	2146	63 2 18	2149
8	**Sun**	W.	46 27 57	2465	48 10 0	2469	49 51 57	2473	51 33 48	2478
	Jupiter	W.	27 22 44	2296	29 8 50	2292	30 55 1	2291	32 41 14	2290
	Regulus	E.	53 54 13	2165	52 4 52	2170	50 15 39	2175	48 26 34	2180
9	**Sun**	W.	60 1 6	2510	61 42 6	2517	63 22 56	2525	65 3 35	2533
	Jupiter	W.	41 31 53	2304	43 17 46	2309	45 3 32	2315	46 49 9	2321
	Regulus	E.	39 23 27	2215	37 35 22	2224	35 47 30	2233	33 59 51	2242
	Saturn	E.	90 22 31	2191	88 33 50	2198	86 45 20	2205	84 57 0	2213
10	**Sun**	W.	73 23 58	2577	75 3 25	2585	76 42 41	2595	78 21 43	2604
	Jupiter	W.	55 34 54	2357	57 19 31	2365	59 3 56	2373	60 48 9	2382
	Saturn	E.	75 58 21	2255	74 11 15	2264	72 24 23	2273	70 37 44	2282
	Spica	E.	78 59 4	2264	77 12 12	2273	75 25 33	2282	73 39 7	2291
11	**Sun**	W.	86 33 31	2655	88 11 11	2666	89 48 37	2676	91 25 49	2687
	Jupiter	W.	69 26 6	2427	71 9 2	2436	72 51 45	2446	74 34 14	2456
	Saturn	E.	61 47 57	2331	60 2 42	2341	58 17 42	2351	56 32 57	2361
	Spica	E.	64 50 21	2338	63 5 17	2348	61 20 27	2357	59 35 51	2368
12	**Sun**	W.	99 28 18	2740	101 4 5	2750	102 39 38	2761	104 14 57	2772
	Jupiter	W.	83 3 14	2504	84 44 21	2515	86 25 14	2525	88 5 53	2535
	Pollux	W.	39 55 9	2419	41 38 16	2429	43 21 9	2439	45 3 48	2448
	Saturn	E.	47 52 52	2413	46 9 36	2424	44 26 36	2436	42 43 52	2446
	Spica	E.	50 56 24	2417	49 13 13	2426	47 30 16	2436	45 47 33	2445
13	**Sun**	W.	112 8 1	2825	113 41 56	2836	115 15 37	2846	116 49 5	2857
	Pollux	W.	53 33 43	2496	55 15 2	2506	56 56 7	2515	58 37 0	2525
	Saturn	E.	34 14 7	2504	32 32 59	2517	30 52 9	2529	29 11 36	2542
	Spica	E.	37 17 24	2495	35 36 4	2504	33 54 57	2515	32 14 4	2524
	Antares	E.	83 10 55	2494	81 29 33	2503	79 48 24	2512	78 7 28	2522

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
14	Pollux	W.	60° 17′ 39″	2534	61° 58′ 5″	2543	63° 38′ 18″	2553	65° 18′ 18″	2562
	Regulus	W.	23 41 0	2564	25 20 44	2571	27 0 19	2577	28 39 46	2584
	Antares	E.	76 26 46	2532	74 46 17	2541	73 6 1	2551	71 25 58	2560
15	Pollux	W.	73 35 8	2607	75 13 53	2617	76 52 25	2626	78 30 45	2635
	Regulus	W.	36 54 34	2621	38 33 0	2629	40 11 16	2637	41 49 21	2646
	Antares	E.	63 8 55	2606	61 30 8	2615	59 51 33	2624	58 13 11	2633
16	Pollux	W.	86 39 22	2680	88 16 29	2688	89 53 25	2697	91 30 9	2705
	Regulus	W.	49 56 56	2687	51 33 54	2695	53 10 40	2704	54 47 15	2712
	Antares	E.	50 4 21	2678	48 27 11	2686	46 50 12	2695	45 13 26	2704
	α Aquilæ	E.	100 49 43	3526	99 29 50	3530	98 9 59	3532	96 50 10	3535
17	Pollux	W.	99 30 57	2749	101 6 32	2757	102 41 56	2766	104 17 8	2775
	Regulus	W.	62 47 23	2754	64 22 51	2763	65 58 8	2771	67 33 14	2779
	Antares	E.	37 12 27	2747	35 36 49	2756	34 1 23	2764	32 26 8	2773
	α Aquilæ	E.	90 12 17	3565	88 53 5	3576	87 34 4	3586	86 15 14	3597
18	Regulus	W.	75 26 2	2821	77 0 3	2829	78 33 53	2838	80 7 32	2845
	SATURN	W.	25 3 12	2844	26 36 43	2846	28 10 11	2850	29 43 34	2855
	Spica	W.	21 22 32	2818	22 56 36	2827	24 30 29	2835	26 4 12	2842
	α Aquilæ	E.	79 44 31	3670	78 27 12	3688	77 10 12	3707	75 53 32	3727
	Fomalhaut	E.	106 13 8	3050	104 43 57	3055	103 14 52	3060	101 45 54	3066
19	Regulus	W.	87 53 12	2886	89 25 49	2894	90 58 16	2901	92 30 33	2909
	SATURN	W.	37 28 40	2886	39 1 17	2892	40 33 46	2898	42 6 7	2905
	Spica	W.	33 50 15	2882	35 22 57	2890	36 55 29	2898	38 27 51	2905
	α Aquilæ	E.	69 36 2	3850	68 21 51	3878	67 8 9	3909	65 54 58	3941
	Fomalhaut	E.	94 22 56	3099	92 54 45	3107	91 26 44	3114	89 58 52	3122
	MARS	E.	100 14 55	3129	98 47 21	3138	97 19 58	3147	95 52 45	3154
20	SATURN	W.	49 45 42	2939	51 17 12	2946	52 48 33	2952	54 19 46	2959
	Spica	W.	46 7 15	2943	47 38 39	2950	49 9 55	2957	50 41 2	2964
	α Aquilæ	E.	59 57 52	4137	58 48 26	4183	57 39 44	4233	56 31 49	4285
	Fomalhaut	E.	82 41 58	3165	81 15 7	3173	79 48 26	3183	78 21 56	3193
	MARS	E.	88 39 3	3194	87 12 47	3202	85 46 40	3209	84 20 42	3216
	α Pegasi	E.	104 10 40	3254	102 45 35	3257	101 20 33	3261	99 55 36	3265
21	SATURN	W.	61 53 48	2990	63 24 13	2996	64 54 31	3002	66 24 41	3007
	Spica	W.	58 14 28	2997	59 44 45	3003	61 14 54	3009	62 44 56	3015
	α Aquilæ	E.	51 5 33	4614	50 3 20	4693	49 2 15	4780	48 2 22	4874
	Fomalhaut	E.	71 12 25	3244	69 47 8	3255	68 22 4	3266	66 57 13	3277
	MARS	E.	77 12 59	3252	75 47 51	3258	74 22 50	3265	72 57 57	3270
	α Pegasi	E.	92 52 9	3290	91 27 46	3295	90 3 29	3301	88 39 19	3308
22	SATURN	W.	73 53 56	3032	75 23 29	3036	76 52 57	3041	78 22 19	3044
	Spica	W.	70 13 22	3040	71 42 45	3044	73 12 3	3049	74 41 15	3052
	Antares	W.	24 19 6	3039	25 48 30	3044	27 17 48	3048	28 47 1	3052
	Fomalhaut	E.	59 56 29	3342	58 33 6	3356	57 9 59	3371	55 47 9	3386
	MARS	E.	65 55 12	3297	64 30 57	3301	63 6 47	3306	61 42 43	3310
	α Pegasi	E.	81 40 21	3340	80 16 56	3348	78 53 40	3355	77 30 32	3362
	VENUS	E.	103 59 19	3454	102 38 4	3461	101 16 56	3465	99 55 53	3471

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	Pollux	W.	66° 58′ 5″	2571	68° 37′ 40″	2580	70° 17′ 2″	2590	71° 56′ 11″	2599
	Regulus	W.	30 19 3	2591	31 58 11	2598	33 37 9	2605	35 15 57	2613
	Antares	E.	69 46 8	2569	68 6 31	2578	66 27 6	2588	64 47 54	2597
15	Pollux	W.	80 8 52	2643	81 46 48	2653	83 24 31	2661	85 2 3	2671
	Regulus	W.	43 27 14	2654	45 4 56	2662	46 42 27	2670	48 19 47	2678
	Antares	E.	56 35 1	2642	54 57 3	2651	53 19 17	2660	51 41 43	2669
16	Pollux	W.	93 6 42	2714	94 43 3	2723	96 19 12	2732	97 55 10	2740
	Regulus	W.	56 23 39	2720	57 59 52	2729	59 35 53	2737	61 11 44	2746
	Antares	E.	43 36 51	2713	42 0 28	2721	40 24 16	2730	38 48 16	2738
	α Aquilæ	E.	95 30 24	3539	94 10 43	3544	92 51 7	3550	91 31 38	3557
17	Pollux	W.	105 52 9	2783	107 26 59	2792	109 1 38	2800	110 36 6	2809
	Regulus	W.	69 8 10	2788	70 42 54	2795	72 17 28	2805	73 51 50	2812
	Antares	E.	30 51 5	2781	29 16 12	2790	27 41 31	2798	26 7 1	2807
	α Aquilæ	E.	84 56 36	3610	83 38 12	3623	82 20 2	3637	81 2 8	3653
18	Regulus	W.	81 41 1	2854	83 14 19	2862	84 47 27	2869	86 20 25	2878
	Saturn	W.	31 16 50	2861	32 49 59	2868	34 23 1	2873	35 55 55	2880
	Spica	W.	27 37 45	2850	29 11 8	2859	30 44 20	2866	32 17 23	2874
	α Aquilæ	E.	74 37 14	3748	73 21 18	3772	72 5 47	3796	70 50 41	3822
	Fomalhaut	E.	100 17 3	3072	98 48 19	3078	97 19 43	3085	95 51 15	3092
19	Regulus	W.	94 2 40	2917	95 34 37	2925	97 6 24	2932	98 38 2	2940
	Saturn	W.	43 38 19	2912	45 10 23	2919	46 42 18	2926	48 14 4	2932
	Spica	W.	40 0 3	2913	41 32 5	2920	43 3 58	2928	44 35 41	2935
	α Aquilæ	E.	64 42 20	3975	63 30 16	4013	62 18 49	4051	61 8 0	4093
	Fomalhaut	E.	88 31 9	3130	87 3 36	3138	85 36 13	3147	84 9 0	3156
	Mars	E.	94 25 41	3163	92 58 47	3171	91 32 3	3178	90 5 28	3187
20	Saturn	W.	55 50 50	2965	57 21 47	2972	58 52 35	2978	60 23 15	2984
	Spica	W.	52 12 0	2970	53 42 50	2977	55 13 31	2984	56 44 4	2991
	α Aquilæ	E.	55 24 43	4342	54 18 29	4404	53 13 11	4468	52 8 51	4539
	Fomalhaut	E.	76 55 38	3202	75 29 31	3213	74 3 37	3223	72 37 55	3233
	Mars	E.	82 54 52	3224	81 29 11	3231	80 3 39	3238	78 38 15	3245
	α Pegasi	E.	98 30 43	3270	97 5 56	3274	95 41 14	3279	94 16 38	3285
21	Saturn	W.	67 54 45	3013	69 24 42	3018	70 54 33	3023	72 24 17	3027
	Spica	W.	64 14 50	3020	65 44 38	3026	67 14 19	3031	68 43 53	3035
	α Aquilæ	E.	47 3 46	4975	46 6 31	5084	45 10 41	5203	44 16 22	5333
	Fomalhaut	E.	65 32 35	3289	64 8 11	3302	62 44 2	3315	61 20 8	3328
	Mars	E.	71 33 11	3276	70 8 32	3282	68 43 59	3288	67 19 33	3292
	α Pegasi	E.	87 15 17	3314	85 51 22	3320	84 27 34	3327	83 3 54	3333
22	Saturn	W.	79 51 37	3048	81 20 50	3052	82 49 59	3055	84 19 4	3057
	Spica	W.	76 10 23	3056	77 39 27	3060	79 8 26	3063	80 37 21	3065
	Antares	W.	30 16 9	3056	31 45 13	3059	33 14 13	3062	34 43 9	3065
	Fomalhaut	E.	54 24 37	3403	53 2 24	3420	51 40 30	3438	50 18 57	3457
	Mars	E.	60 18 43	3313	58 54 47	3318	57 30 56	3321	56 7 9	3324
	α Pegasi	E.	76 7 32	3370	74 44 41	3378	73 21 59	3386	71 59 26	3393
	Venus	E.	98 34 56	3474	97 14 3	3479	95 53 15	3482	94 32 31	3486

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon. ° ′ ″	P. L. of Diff.	IIIh. ° ′ ″	P. L. of Diff.	VIh. ° ′ ″	P. L. of Diff.	IXh. ° ′ ″	P. L. of Diff.
23	Saturn	W.	85 48 6	3060	87 17 5	3062	88 46 1	3064	90 14 55	3065
	Spica	W.	82 6 13	3068	83 35 2	3070	85 3 48	3072	86 32 32	3073
	Antares	W.	36 12 1	3068	37 40 50	3069	39 9 37	3072	40 38 21	3073
	Fomalhaut	E.	48 57 45	3478	47 36 56	3500	46 16 32	3524	44 56 34	3550
	Mars	E.	54 43 25	3326	53 19 44	3329	51 56 6	3331	50 32 30	3332
	α Pegasi	E.	70 37 2	3402	69 14 48	3411	67 52 44	3420	66 30 50	3430
	Venus	E.	93 11 51	3488	91 51 14	3490	90 30 39	3493	89 10 7	3496
24	Saturn	W.	97 39 4	3068	99 7 53	3068	100 36 42	3066	102 5 33	3065
	Antares	W.	48 1 44	3075	49 30 24	3074	50 59 5	3073	52 27 47	3072
	Mars	E.	43 34 46	3334	42 11 14	3333	40 47 41	3332	39 24 6	3331
	α Pegasi	E.	59 44 9	3483	58 23 26	3495	57 2 56	3508	55 42 41	3522
	Venus	E.	82 27 53	3499	81 7 28	3498	79 47 2	3498	78 26 36	3497
	α Arietis	E.	100 21 18	3114	98 53 26	3113	97 25 32	3112	95 57 37	3110
25	Antares	W.	59 51 55	3058	61 20 56	3055	62 50 1	3051	64 19 11	3045
	Mars	E.	32 25 36	3316	31 1 43	3312	29 37 45	3307	28 13 42	3301
	Venus	E.	71 43 53	3484	70 23 11	3480	69 2 24	3475	67 41 32	3471
	α Arietis	E.	88 37 22	3096	87 9 8	3092	85 40 49	3088	84 12 25	3084
	Sun	E.	115 46 22	3439	114 24 50	3434	113 3 12	3430	111 41 29	3425
26	Antares	W.	71 46 46	3014	73 16 41	3007	74 46 45	2999	76 16 59	2990
	Mars	E.	21 11 43	3969	19 46 55	3960	18 21 57	3953	16 56 50	3943
	Venus	E.	60 55 42	3439	59 34 10	3431	58 12 29	3423	56 50 39	3415
	α Arietis	E.	76 48 52	3055	75 19 47	3047	73 50 33	3040	72 21 10	3033
	Sun	E.	104 51 9	3390	103 28 41	3381	102 6 3	3372	100 43 15	3364
27	Antares	W.	83 50 58	2942	85 22 23	2931	86 54 3	2920	88 25 57	2908
	α Aquilæ	W.	44 34 50	5073	45 30 48	4949	46 28 24	4834	47 27 32	4728
	Venus	E.	49 58 54	3365	48 35 58	3355	47 12 50	3343	45 49 28	3331
	α Arietis	E.	64 51 45	2989	63 21 19	2979	61 50 40	2969	60 19 49	2958
	Sun	E.	93 46 29	3311	92 22 30	3299	90 58 17	3287	89 33 50	3274
28	α Aquilæ	W.	52 43 55	4292	53 50 55	4220	54 59 2	4153	56 8 13	4068
	Venus	E.	38 49 2	3266	37 24 11	3253	35 59 4	3239	34 33 41	3225
	α Arietis	E.	52 42 10	2904	51 9 56	2892	49 37 27	2881	48 4 44	2869
	Sun	E.	82 27 39	3204	81 1 34	3188	79 35 10	3173	78 8 28	3157
29	α Aquilæ	W.	62 8 49	3814	63 23 37	3767	64 39 14	3721	65 55 39	3677
	Fomalhaut	W.	31 30 21	3608	32 48 34	3526	34 8 27	3446	35 29 52	3370
	α Arietis	E.	40 17 27	2814	38 43 17	2805	37 8 55	2795	35 34 21	2787
	Sun	E.	70 50 1	3072	69 21 17	3054	67 52 11	3036	66 22 43	3018
30	α Aquilæ	W.	72 28 44	3487	73 49 23	3454	75 10 39	3422	76 32 31	3391
	Fomalhaut	W.	42 36 30	3075	44 5 10	3029	45 34 47	2985	47 5 19	2942
	Mars	W.	26 5 57	2807	27 40 16	2788	29 14 59	2769	30 50 7	2750
	Sun	E.	58 49 41	2925	57 17 54	2906	55 45 43	2887	54 13 8	2869
31	α Aquilæ	W.	83 30 6	3258	84 55 7	3236	86 20 34	3214	87 46 27	3194
	Fomalhaut	W.	54 50 21	2765	56 25 35	2733	58 1 31	2704	59 38 6	2675
	Mars	W.	38 52 14	2653	40 29 57	2634	42 8 6	2615	43 46 41	2596
	Sun	E.	46 24 11	2776	44 49 12	2758	43 13 49	2740	41 38 2	2723

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XV^h.	P.L. of Diff.	XVIII^h.	P.L. of Diff.	XXI^h.	P.L. of Diff.
23	**Saturn**	W.	91° 43′ 47″	3066	93° 12′ 38″	3068	94° 41′ 27″	3068	96° 10′ 16″	3069
	Spica	W.	88 1 14	3074	89 29 55	3075	90 58 35	3076	92 27 14	3076
	Antares	W.	42 7 4	3074	43 35 45	3075	45 4 25	3076	46 33 4	3075
	Fomalhaut	E.	43 37 5	3577	42 18 6	3608	40 59 40	3641	39 41 50	3677
	Mars	E.	49 8 55	3333	47 45 22	3334	46 21 50	3334	44 58 18	3334
	α Pegasi	E.	65 9 7	3439	63 47 35	3449	62 26 14	3460	61 5 5	3471
	Venus	E.	87 49 38	3497	86 29 10	3498	85 8 44	3498	83 48 18	3499
24	**Saturn**	W.	103 34 25	3064	105 3 19	3061	106 32 16	3059	108 1 16	3056
	Antares	W.	53 56 31	3070	55 25 17	3068	56 54 6	3065	58 22 59	3062
	Mars	E.	38 0 30	3328	36 36 51	3326	35 13 10	3323	33 49 25	3319
	α Pegasi	E.	54 22 42	3538	53 3 0	3554	51 43 35	3572	50 24 30	3590
	Venus	E.	77 6 8	3495	75 45 38	3493	74 25 6	3490	73 4 31	3488
	α Arietis	E.	94 29 40	3109	93 1 41	3105	91 33 38	3103	90 5 32	3100
25	Antares	W.	65 48 28	3040	67 17 51	3034	68 47 22	3028	70 17 0	3022
	Mars	E.	26 49 32	3296	25 25 16	3290	24 0 53	3283	22 36 22	3276
	Venus	E.	66 20 35	3465	64 59 32	3459	63 38 22	3454	62 17 6	3446
	α Arietis	E.	82 43 56	3078	81 15 20	3073	79 46 38	3068	78 17 49	3061
	Sun	E.	110 19 39	3418	108 57 43	3412	107 35 40	3405	106 13 29	3397
26	Antares	W.	77 47 24	2981	79 18 0	2973	80 48 47	2963	82 19 46	2953
	Mars	E.	15 31 32	3234	14 6 3	3224	12 40 22	3214	11 14 29	3204
	Venus	E.	55 28 40	3406	54 6 30	3397	52 44 10	3386	51 21 38	3376
	α Arietis	E.	70 51 38	3025	69 21 56	3016	67 52 3	3008	66 22 0	2998
	Sun	E.	99 20 17	3354	97 57 8	3344	96 33 47	3333	95 10 14	3323
27	Antares	W.	89 58 6	2695	91 30 31	2683	93 3 12	2669	94 36 10	2656
	α Aquilæ	W.	48 28 8	4629	49 30 8	4536	50 33 28	4449	51 38 5	4368
	Venus	E.	44 25 52	3319	43 2 2	3306	41 37 57	3293	40 13 37	3280
	α Arietis	E.	58 48 44	2948	57 17 26	2938	55 45 55	2927	54 14 10	2915
	Sun	E.	88 9 8	3261	86 44 11	3247	85 18 57	3233	83 53 27	3218
28	α Aquilæ	W.	57 18 26	4028	58 29 38	3969	59 41 48	3916	60 54 52	3863
	Venus	E.	33 8 1	3211	31 42 5	3197	30 15 52	3183	28 49 22	3169
	α Arietis	E.	46 31 46	2858	44 58 33	2846	43 25 5	2835	41 51 23	2825
	Sun	E.	76 41 27	3140	75 14 6	3124	73 46 25	3107	72 18 24	3089
29	α Aquilæ	W.	67 12 50	3635	68 30 46	3597	69 49 24	3558	71 8 44	3522
	Fomalhaut	W.	36 52 43	3300	38 16 54	3238	39 42 18	3180	41 8 51	3125
	α Arietis	E.	33 59 36	2780	32 24 42	2775	30 49 41	2771	29 14 35	2771
	Sun	E.	64 52 53	3000	63 22 40	2981	61 52 4	2962	60 21 4	2944
30	α Aquilæ	W.	77 54 58	3362	79 17 58	3334	80 41 30	3307	82 5 33	3282
	Fomalhaut	W.	48 36 44	2903	50 8 59	2866	51 42 1	2831	53 15 49	2797
	Mars	W.	32 25 41	2730	34 1 41	2711	35 38 6	2692	37 14 57	2672
	Sun	E.	52 40 9	2850	51 6 46	2831	49 32 58	2812	47 58 46	2795
31	α Aquilæ	W.	89 12 43	3176	90 39 21	3158	92 6 20	3143	93 33 37	3129
	Fomalhaut	W.	61 15 20	2648	62 53 10	2621	64 31 36	2596	66 10 36	2572
	Mars	W.	45 25 41	2577	47 5 7	2559	48 44 58	2540	50 25 15	2523
	Sun	E.	40 1 53	2707	38 25 22	2690	36 48 29	2675	35 11 15	2660

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Frid.	1	4 37 23.85	10.240	N.22 5 51.4	+20.18	15 48.35	68.43	2 25.02	0.382
Sat.	2	4 41 29.81	10.256	22 13 44.1	19.21	15 48.22	68.48	2 15.64	0.398
SUN.	3	4 45 36.15	10.272	22 21 13.6	18.24	15 48.09	68.53	2 5.89	0.414
Mon.	4	4 49 42.86	10.287	22 28 19.6	+17.26	15 47.96	68.58	1 55.77	0.429
Tues.	5	4 53 49.91	10.301	22 35 2.0	16.27	15 47.84	68 63	1 45.30	0.443
Wed.	6	4 57 57.28	10.313	22 41 20.6	15.28	15 47.73	68.67	1 34.51	0.456
Thur.	7	5 2 4.96	10.325	22 47 15.3	+14.28	15 47.62	68.71	1 23.43	0.467
Frid.	8	5 6 12.90	10.336	22 52 46.0	13.28	15 47.51	68.75	1 12.08	0.478
Sat.	9	5 10 21.09	10.346	22 57 52.5	12.27	15 47.41	68.79	1 0.47	0.488
SUN.	10	5 14 29.52	10.355	23 2 34.7	+11.25	15 47.32	68.82	0 48.64	0.497
Mon.	11	5 18 38.14	10.363	23 6 52.6	10.23	15 47.23	68.85	0 36.61	0.505
Tues.	12	5 22 46.95	10.370	23 10 46.0	9.21	15 47.14	68.88	0 24.39	0.512
Wed.	13	5 26 55.93	10.377	23 14 14.9	+ 8.19	15 47.06	68.90	0 12.00	0.518
Thur.	14	5 31 5.04	10.382	23 17 19.3	7.17	15 46.98	68.91	0 0.52	0.524
Frid.	15	5 35 14 28	10.387	23 19 59.0	6.14	15 46.90	68.93	0 13.16	0.529
Sat.	16	5 39 23.62	10.391	23 22 14.1	+ 5.11	15 46.83	68.95	0 25.90	0.533
SUN.	17	5 43 33.04	10.394	23 24 4.4	4.08	15 46.76	68.96	0 38.73	0.536
Mon.	18	5 47 42.52	10.396	23 25 30.1	3.05	15 46.70	68.97	0 51.62	0.538
Tues.	19	5 51 52.04	10.397	23 26 31.0	+ 2.02	15 46.63	68.98	1 4.55	0.539
Wed.	20	5 56 1.59	10.398	23 27 7.1	+ 0.99	15 46.57	68.98	1 17.50	0.540
Thur.	21	6 0 11.14	10.398	23 27 18.5	− 0.04	15 46.52	68.97	1 30.46	0.540
Frid.	22	6 4 20.68	10.397	23 27 5.1	− 1.08	15 46.46	68.97	1 43.40	0.538
Sat.	23	6 8 30.18	10.395	23 26 26.9	2.11	15 46.41	68.96	1 56.30	0.536
SUN.	24	6 12 39.62	10.392	23 25 23.9	3.15	15 46.36	68.95	2 9.15	0.534
Mon.	25	6 16 48.98	10.388	23 23 56.2	− 4.18	15 46.32	68.93	2 21.92	0.531
Tues.	26	6 20 58.23	10.383	23 22 3.8	5.20	15 46.28	68.91	2 34.58	0.526
Wed.	27	6 25 7.37	10.377	23 19 46.8	6.23	15 46.25	68.89	2 47.12	0.519
Thur.	28	6 29 16.34	10.370	23 17 5.1	− 7.25	15 46.22	68.86	2 59.50	0.512
Frid.	29	6 33 25.15	10.363	23 13 58.8	8.27	15 46.20	68.84	3 11.72	0.504
Sat.	30	6 37 33.76	10.354	23 10 28.1	9.29	15 46.18	68.81	3 23.73	0.495
SUN.	31	6 41 42.14	10.344	N.23 6 33.0	−10.30	15 46.17	68.77	3 35.52	0.486

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.19$ from the sidereal time.
The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign — indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Frid.	1	4 37 24.26	10.239	N.22 5 52.2	+20.18	2 25.00	0.382	4 39 49.27
Sat.	2	4 41 30.20	10.255	22 13 44.9	19.21	2 15.63	0.398	4 43 45.82
SUN.	3	4 45 36.51	10.271	22 21 14.3	18.24	2 5.87	0.414	4 47 42.38
Mon.	4	4 49 43.19	10.286	22 28 20.2	+17.26	1 55.75	0.429	4 51 38.94
Tues.	5	4 53 50.21	10.300	22 35 2.5	16.27	1 45.29	0.443	4 55 35.50
Wed.	6	4 57 57.56	10.312	22 41 21.0	15.28	1 34.50	0.456	4 59 32.06
Thur.	7	5 2 5.19	10.324	22 47 15.7	+14.28	1 23.42	0.467	5 3 28.62
Frid.	8	5 6 13.10	10.335	22 52 46.3	13.28	1 12.07	0.478	5 7 25.17
Sat.	9	5 10 21.27	10.345	22 57 52.7	12.27	1 0.46	0.488	5 11 21.73
SUN.	10	5 14 29.66	10.354	23 2 34.9	+11.25	0 48.63	0.497	5 15 18.29
Mon.	11	5 18 38.25	10.362	23 6 52.7	10.23	0 36.60	0.505	5 19 14.85
Tues.	12	5 22 47.03	10.369	23 10 46.1	9.21	0 24.38	0.512	5 23 11.41
Wed.	13	5 26 55.97	10.376	23 14 15.0	+ 8.19	0 12.00	0.518	5 27 7.97
Thur.	14	5 31 5.04	10.381	23 17 19.3	7.17	0 0.52	0.524	5 31 4.53
Frid.	15	5 35 14.24	10.385	23 19 59.0	6.14	0 13.16	0.529	5 35 1.09
Sat.	16	5 39 23.55	10.389	23 22 14.0	+ 5.11	0 25.90	0.533	5 38 57.64
SUN.	17	5 43 32.93	10.393	23 24 4.4	4.08	0 38.73	0.536	5 42 54.20
Mon.	18	5 47 42.37	10.395	23 25 30.1	3.05	0 51.61	0.538	5 46 50.76
Tues.	19	5 51 51.86	10.396	23 26 31.0	+ 2.02	1 4.54	0.539	5 50 47.32
Wed.	20	5 56 1.37	10.396	23 27 7.1	+ 0.99	1 17.49	0.540	5 54 43.88
Thur.	21	6 0 10.88	10.396	23 27 18.5	− 0.04	1 30.44	0.539	5 58 40.44
Frid.	22	6 4 20.38	10.395	23 27 5.1	− 1.07	1 43.38	0.538	6 2 37.00
Sat.	23	6 8 29.84	10.393	23 26 26.9	2.10	1 56.28	0.536	6 6 33.56
SUN.	24	6 12 39.25	10.390	23 25 24.0	3.14	2 9.13	0.534	6 10 30.12
Mon.	25	6 16 48.57	10.386	23 23 56.4	− 4.17	2 21.90	0.531	6 14 26.67
Tues.	26	6 20 57.79	10.381	23 22 4.0	5.19	2 34.56	0.526	6 18 23.23
Wed.	27	6 25 6.88	10.375	23 19 47.0	6.22	2 47.09	0.519	6 22 19.79
Thur.	28	6 29 15.83	10.368	23 17 5.4	− 7.25	2 59.48	0.512	6 26 16.35
Frid.	29	6 33 24.60	10.361	23 13 59.3	8.27	3 11.69	0.504	6 30 12.91
Sat.	30	6 37 33.17	10.352	23 10 28.6	9.29	3 23.70	0.495	6 34 9.47
SUN.	31	6 41 41.52	10.343	N.23 6 33.6	−10.30	3 35.49	0.486	6 38 6.03

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign + prefixed to the hourly change of declination indicates that north declinations are increasing; the sign − indicates that north declinations are decreasing.

Diff. for 1 Hour,
+ 9ˢ.8565.
(Table III.)

AT GREENWICH MEAN NOON.								
Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	152	70 56 5.2	55 47.2	143.72	+ 0.17	0.0062053	+26.4	19 17 0.67
2	153	71 53 34.1	53 15.9	143.69	0.26	0.0062675	25.4	19 13 4.75
3	154	72 51 2.1	50 43.7	143.65	0.33	0.0063271	24.3	19 9 8.84
4	155	73 48 29.2	48 10.6	143.61	+ 0.37	0.0063843	+23.4	19 5 12.93
5	156	74 45 55.3	45 36.5	143.57	0.39	0.0064393	22.4	19 1 17.02
6	157	75 43 20.5	43 1.5	143.53	0.37	0.0064917	21.3	18 57 21.10
7	158	76 40 44.7	40 25.5	143.49	+ 0.32	0.0065417	+20.4	18 53 25.19
8	159	77 38 7.8	37 48.4	143.44	0.25	0.0065897	19.5	18 49 29.28
9	160	78 35 30.0	35 10.4	143.40	0.15	0.0066352	18.5	18 45 33.37
10	161	79 32 51.1	32 31.3	143.36	+ 0.04	0.0066787	+17.7	18 41 37.45
11	162	80 30 11.3	29 51.4	143.32	– 0.09	0.0067204	16.9	18 37 41.54
12	163	81 27 30.5	27 10.4	143.28	0.22	0.0067600	16.1	18 33 45.63
13	164	82 24 48.7	24 28.4	143.24	– 0.35	0.0067979	+15.5	18 29 49.72
14	165	83 22 6 0	21 45.5	143.21	0.47	0.0068342	14.8	18 25 53.80
15	166	84 19 22.6	19 1.9	143.18	0.58	0.0068690	14.2	18 21 57.89
16	167	85 16 38.5	16 17.6	143.15	– 0.67	0.0069023	+13.6	18 18 1.98
17	168	86 13 53.7	13 32.6	143.12	0.72	0.0069342	13.0	18 14 6.06
18	169	87 11 8.3	10 47.0	143.10	0.75	0.0069645	12.4	18 10 10.15
19	170	88 8 22.6	8 1.1	143.09	– 0.75	0.0069937	+11.9	18 6 14.24
20	171	89 5 36.4	5 14.7	143.07	0.71	0.0070214	11.2	18 2 18.32
21	172	90 2 49.8	2 27.9	143.06	0.65	0.0070475	10.6	17 58 22.41
22	173	90 60 3.1	59 41.0	143.05	– 0.57	0.0070722	+10.0	17 54 26.50
23	174	91 57 16.3	56 54.0	143.05	0.46	0.0070953	9.3	17 50 30.59
24	175	92 54 29.5	54 7.0	143.05	0.34	0.0071168	8.6	17 46 34.67
25	176	93 51 42.5	51 19.8	143.04	– 0.21	0.0071364	+ 7.7	17 42 38.76
26	177	94 48 55.6	48 32.8	143.05	– 0.07	0.0071538	6.9	17 38 42.85
27	178	95 46 8.8	45 45.8	143.05	+ 0.07	0.0071693	5.9	17 34 46.93
28	179	96 43 22.0	42 58.8	143.05	+ 0.18	0.0071825	+ 5.0	17 30 51.02
29	180	97 40 35.4	40 12.0	143.06	0.29	0.0071933	4.0	17 26 55.11
30	181	98 37 48.8	37 25.2	143.06	0.37	0.0072016	2.9	17 22 59.20
31	182	99 35 2.3	34 38.5	143.06	+ 0.42	0.0072074	+ 1.9	17 19 3.28

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 7.7	16 14.6	59 5.1	+2.16	59 30.3	+2.00	22 26.1	2.37	26.9
2	16 20.8	16 26.3	59 53.2	1.79	60 13.3	1.53	23 26.1	2.60	27.9
3	16 30.9	16 34.4	60 30.0	1.24	60 43.0	0.90	δ		28.9
4	16 36.8	16 37.9	60 51.7	+0.54	60 56.0	+0.18	0 31.1	2.78	0.5
5	16 37.9	16 36.7	60 55.9	−0.19	60 51.5	−0.53	1 38.5	2.80	1.5
6	16 34.4	16 31.2	60 43.1	0.85	60 31.1	1.14	2 44.3	2.66	2.5
7	16 27.0	16 22.1	60 15.8	−1.38	59 58.0	−1.58	3 45.5	2.43	3.5
8	16 16.7	16 10.8	59 38.0	1.73	59 16.5	1.83	4 41.0	2.19	4.5
9	16 4.7	15 58.5	58 54.1	1.89	58 31.1	1.92	5 31.4	2.01	5.5
10	15 52.2	15 46.0	58 8.1	−1.90	57 45.4	−1.87	6 18.0	1.88	6.5
11	15 40.0	15 34.2	57 23.3	1.81	57 2.0	1.74	7 2.3	1.82	7.5
12	15 28.7	15 23.4	56 41.6	1.65	56 22.4	1.55	7 45.9	1.82	8.5
13	15 18.5	15 13.9	56 4.3	−1.45	55 47.5	−1.35	8 30.0	1.86	9.5
14	15 9.7	15 5.7	55 31.8	1.25	55 17.4	1.15	9 15.6	1.94	10.5
15	15 2.1	14 58.9	55 4.3	1.05	54 52.3	0.95	10 3.4	2.04	11.5
16	14 56.0	14 53.4	54 41.5	−0.85	54 31.9	−0.75	10 53.3	2.12	12.5
17	14 51.0	14 49.1	54 23.4	0.66	54 16.1	0.55	11 44.9	2.17	13.5
18	14 47.4	14 46.1	54 10.1	0.45	54 5.3	0.35	12 37.0	2.16	14.5
19	14 45.2	14 44.6	54 1.8	−0.24	53 59.6	−0.12	13 28.1	2.09	15.5
20	14 44.4	14 44.6	53 59.0	+0.01	53 59.9	+0.15	14 17.2	2.00	16.5
21	14 45.3	14 46.5	54 2.5	0.29	54 6.8	0.44	15 3.8	1.88	17.5
22	14 48.2	14 50.4	54 13.0	+0.60	54 21.2	+0.77	15 47.8	1.79	18.5
23	14 53.2	14 56.6	54 31.4	0.94	54 43.8	1.12	16 30.0	1.73	19.5
24	15 0.5	15 5.1	54 58.3	1.30	55 15.1	1.49	17 11.1	1.71	20.5
25	15 10.3	15 16.0	55 34.0	+1.66	55 55.0	+1.83	17 52.4	1.74	21.5
26	15 22.2	15 29.0	56 18.0	1.99	56 42.8	2.13	18 35.1	1.83	22.5
27	15 36.2	15 43.7	57 9.1	2.25	57 36.7	2.33	19 20.8	1.98	23.5
28	15 51.4	15 59.2	58 5.0	+2.37	58 33.6	+2.38	20 10.9	2.21	24.5
29	16 6.9	16 14.4	59 2.0	2.33	59 29.6	2.23	21 6.9	2.46	25.5
30	16 21.5	16 27.9	59 55.5	2.06	60 19.1	1.85	22 8.9	2.70	26.5
31	16 33.5	16 38.2	60 39.8	+1.57	60 56.8	+1.24	23 15.7	2.82	27.5

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 17 1.20	2.2475	N.16 20 10.4	14.172
1	2 19 16.30	2.2559	16 34 18.6	14.100
2	2 21 31.91	2.2643	16 48 22.4	14.025
3	2 23 48.02	2.2728	17 2 21.6	13.948
4	2 26 4.65	2.2814	17 16 16.2	13.870
5	2 28 21.79	2.2900	17 30 6.0	13.789
6	2 30 39.45	2.2987	17 43 50.9	13.707
7	2 32 57.64	2.3075	17 57 30.8	13.622
8	2 35 16.35	2.3163	18 11 5.5	13.535
9	2 37 35.59	2.3251	18 24 35.0	13.446
10	2 39 55.36	2.3340	18 37 59.1	13.355
11	2 42 15.67	2.3430	18 51 17.6	13.262
12	2 44 36.52	2.3520	19 4 30.5	13.167
13	2 46 57.91	2.3610	19 17 37.6	13.069
14	2 49 19.84	2.3701	19 30 38.8	12.969
15	2 51 42.32	2.3792	19 43 33.9	12.867
16	2 54 5.35	2.3884	19 56 22.8	12.763
17	2 56 28.93	2.3975	20 9 5.4	12.656
18	2 58 53.05	2.4067	20 21 41.5	12.547
19	3 1 17.73	2.4160	20 34 11.0	12.436
20	3 3 42.97	2.4252	20 46 33.8	12.323
21	3 6 8.76	2.4345	20 58 49.7	12.207
22	3 8 35.11	2.4438	21 10 58.6	12.089
23	3 11 2.02	2.4531	N.21 23 0.4	11.969

SATURDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 13 29.48	2.4624	N.21 34 54.9	11.847
1	3 15 57.50	2.4717	21 46 42.0	11.722
2	3 18 26.08	2.4810	21 58 21.5	11.594
3	3 20 55.22	2.4903	22 9 53.3	11.464
4	3 23 24.92	2.4996	22 21 17.2	11.333
5	3 25 55.17	2.5088	22 32 33.2	11.199
6	3 28 25.98	2.5181	22 43 41.1	11.062
7	3 30 57.34	2.5273	22 54 40.7	10.923
8	3 33 29.25	2.5365	23 5 31.9	10.782
9	3 36 1.72	2.5457	23 16 14.6	10.639
10	3 38 34.74	2.5548	23 26 48.6	10.493
11	3 41 8.30	2.5638	23 37 13.8	10.346
12	3 43 42.40	2.5728	23 47 30.1	10.196
13	3 46 17.04	2.5818	23 57 37.3	10.043
14	3 48 52.22	2.5908	24 7 35.3	9.888
15	3 51 27.94	2.5997	24 17 23.9	9.732
16	3 54 4.19	2.6085	24 27 3.1	9.573
17	3 56 40.96	2.6172	24 36 32.6	9.411
18	3 59 18.25	2.6258	24 45 52.4	9.247
19	4 1 56.06	2.6344	24 55 2.3	9.082
20	4 4 34.38	2.6429	25 4 2.2	8.913
21	4 7 13.21	2.6513	25 12 51.9	8.743
22	4 9 52.54	2.6596	25 21 31.4	8.572
23	4 12 32.36	2.6677	25 30 0.5	8.397
24	4 15 12.67	2.6758	N.25 38 19.1	8.221

SUNDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 15 12.67	2.6758	N.25 38 19.1	8.221
1	4 17 53.46	2.6838	25 46 27.0	8.042
2	4 20 34.73	2.6917	25 54 24.2	7.862
3	4 23 16.46	2.6993	26 2 10.5	7.680
4	4 25 58.65	2.7069	26 9 45.8	7.495
5	4 28 41.29	2.7143	26 17 9.9	7.308
6	4 31 24.37	2.7217	26 24 22.8	7.120
7	4 34 7.89	2.7288	26 31 24.3	6.930
8	4 36 51.83	2.7357	26 38 14.4	6.738
9	4 39 36.18	2.7426	26 44 52.9	6.544
10	4 42 20.94	2.7493	26 51 19.7	6.349
11	4 45 6.10	2.7559	26 57 34.8	6.152
12	4 47 51.65	2.7622	27 3 37.9	5.952
13	4 50 37.57	2.7684	27 9 29.0	5.752
14	4 53 23.86	2.7744	27 15 8.1	5.550
15	4 56 10.50	2.7802	27 20 35.0	5.346
16	4 58 57.48	2.7858	27 25 49.6	5.140
17	5 1 44.79	2.7912	27 30 51.8	4.933
18	5 4 32.42	2.7964	27 35 41.6	4.725
19	5 7 20.36	2.8014	27 40 18.9	4.517
20	5 10 8.59	2.8062	27 44 43.6	4.306
21	5 12 57.10	2.8108	27 48 55.6	4.094
22	5 15 45.88	2.8152	27 52 54.8	3.881
23	5 18 34.92	2.8193	N.27 56 41.3	3.667

MONDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	5 21 24.20	2.8232	N.28 0 14.9	3.452
1	5 24 13.71	2.8269	28 3 35.5	3.236
2	5 27 3.43	2.8304	28 6 43.2	3.019
3	5 29 53.36	2.8336	28 9 37.8	2.801
4	5 32 43.47	2.8366	28 12 19.3	2.582
5	5 35 33.75	2.8394	28 14 47.6	2.362
6	5 38 24.20	2.8420	28 17 2.7	2.142
7	5 41 14.79	2.8442	28 19 4.6	1.921
8	5 44 5.50	2.8462	28 20 53.2	1.700
9	5 46 56.33	2.8480	28 22 28.6	1.478
10	5 49 47.26	2.8495	28 23 50.6	1.255
11	5 52 38.27	2.8508	28 24 59.2	1.032
12	5 55 29.36	2.8519	28 25 54.5	0.810
13	5 58 20.50	2.8526	28 26 36.4	0.587
14	6 1 11.67	2.8531	28 27 4.9	0.363
15	6 4 2.87	2.8534	28 27 19.9	+ 0.139
16	6 6 54.08	2.8534	28 27 21.5	− 0.084
17	6 9 45.28	2.8532	28 27 9.8	0.308
18	6 12 36.47	2.8528	28 26 44.6	0.532
19	6 15 27.62	2.8520	28 26 6.0	0.755
20	6 18 18.71	2.8510	28 25 14.0	0.978
21	6 21 9.74	2.8498	28 24 8.6	1.201
22	6 24 0.69	2.8483	28 22 49.8	1.424
23	6 26 51.54	2.8467	28 21 17.7	1.646
24	6 29 42.29	2.8447	N.28 19 32.3	1.867

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 29 42.29	2.8447	N.28 19 32.3	1.867
1	6 32 32.91	2.8425	28 17 33.6	2.088
2	6 35 23.39	2.8400	28 15 21.7	2.308
3	6 38 13.71	2.8373	28 12 56.6	2.528
4	6 41 3.87	2.8344	28 10 18.3	2.747
5	6 43 53.84	2.8312	28 7 26.9	2.966
6	6 46 43.61	2.8278	28 4 22.4	3.183
7	6 49 33.17	2.8242	28 1 4.9	3.399
8	6 52 22.51	2.8203	27 57 34.5	3.614
9	6 55 11.61	2.8162	27 53 51.2	3.829
10	6 58 0.46	2.8120	27 49 55.0	4.042
11	7 0 49.05	2.8075	27 45 46.1	4.254
12	7 3 37.36	2.8028	27 41 24.5	4.465
13	7 6 25.38	2.7978	27 36 50.3	4.675
14	7 9 13.10	2.7927	27 32 3.5	4.884
15	7 12 0.51	2.7874	27 27 4.2	5.092
16	7 14 47.59	2.7819	27 21 52.5	5.297
17	7 17 34.34	2.7762	27 16 28.6	5.500
18	7 20 20.74	2.7703	27 10 52.5	5.702
19	7 23 6.78	2.7643	27 5 4.3	5.904
20	7 25 52.46	2.7582	26 59 4.0	6.104
21	7 28 37.76	2.7518	26 52 51.8	6.302
22	7 31 22.67	2.7452	26 46 27.8	6.498
23	7 34 7.18	2.7384	N.26 39 52.0	6.693

WEDNESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 36 51.28	2.7316	N.26 33 4.6	6.886
1	7 39 34.97	2.7246	26 26 5.7	7.077
2	7 42 18.23	2.7174	26 18 55.4	7.265
3	7 45 1.06	2.7102	26 11 33.9	7.452
4	7 47 43.45	2.7028	26 4 1.2	7.638
5	7 50 25.39	2.6952	25 56 17.3	7.822
6	7 53 6.87	2.6875	25 48 22.5	8.003
7	7 55 47.89	2.6797	25 40 16.9	8.182
8	7 58 28.44	2.6718	25 32 0.6	8.361
9	8 1 8.51	2.6638	25 23 33.6	8.537
10	8 3 48.10	2.6557	25 14 56.2	8.710
11	8 6 27.20	2.6475	25 6 8.4	8.882
12	8 9 5.80	2.6392	24 57 10.4	9.051
13	8 11 43.90	2.6308	24 48 2.3	9.218
14	8 14 21.50	2.6225	24 38 44.2	9.383
15	8 16 58.60	2.6140	24 29 16.3	9.546
16	8 19 35.19	2.6055	24 19 38.7	9.707
17	8 22 11.26	2.5968	24 9 51.5	9.866
18	8 24 46.80	2.5880	23 59 54.8	10.023
19	8 27 21.82	2.5793	23 49 48.8	10.177
20	8 29 56.32	2.5706	23 39 33.6	10.328
21	8 32 30.29	2.5617	23 29 9.4	10.478
22	8 35 3.73	2.5528	23 18 36.2	10.627
23	8 37 36.63	2.5439	23 7 54.2	10.772
24	8 40 9.00	2.5350	N.22 57 3.6	10.915

THURSDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 40 9.00	2.5350	N.22 57 3.6	10.915
1	8 42 40.83	2.5261	22 46 4.4	11.057
2	8 45 12.13	2.5172	22 34 56.8	11.195
3	8 47 42.89	2.5082	22 23 41.0	11.332
4	8 50 13.11	2.4992	22 12 17.0	11.466
5	8 52 42.79	2.4901	22 0 45.1	11.598
6	8 55 11.92	2.4810	21 49 5.3	11.728
7	8 57 40.51	2.4721	21 37 17.7	11.856
8	9 0 8.57	2.4632	21 25 22.6	11.981
9	9 2 36.09	2.4542	21 13 20.0	12.104
10	9 5 3.07	2.4452	21 1 10.1	12.225
11	9 7 29.51	2.4362	20 48 53.0	12.344
12	9 9 55.42	2.4273	20 36 28.8	12.461
13	9 12 20.79	2.4184	20 23 57.7	12.575
14	9 14 45.63	2.4095	20 11 19.8	12.687
15	9 17 9.93	2.4006	19 58 35.2	12.797
16	9 19 33.70	2.3918	19 45 44.1	12.905
17	9 21 56.95	2.3830	19 32 46.6	13.011
18	9 24 19.68	2.3744	19 19 42.8	13.114
19	9 26 41.88	2.3657	19 6 32.9	13.215
20	9 29 3.56	2.3571	18 53 17.0	13.315
21	9 31 24.73	2.3485	18 39 55.1	13.413
22	9 33 45.38	2.3399	18 26 27.5	13.508
23	9 36 5.52	2.3315	N.18 12 54.2	13.601

FRIDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 38 25.16	2.3231	N.17 59 15.4	13.692
1	9 40 44.29	2.3147	17 45 31.2	13.780
2	9 43 2.92	2.3063	17 31 41.8	13.867
3	9 45 21.05	2.2981	17 17 47.2	13.952
4	9 47 38.69	2.2900	17 3 47.6	14.034
5	9 49 55.85	2.2819	16 49 43.1	14.116
6	9 52 12.52	2.2738	16 35 33.7	14.195
7	9 54 28.71	2.2659	16 21 19.7	14.271
8	9 56 44.43	2.2580	16 7 1.2	14.346
9	9 58 59.67	2.2501	15 52 38.2	14.419
10	10 1 14.44	2.2424	15 38 10.9	14.490
11	10 3 28.76	2.2348	15 23 39.4	14.559
12	10 5 42.62	2.2272	15 9 3.8	14.627
13	10 7 56.02	2.2197	14 54 24.2	14.692
14	10 10 8.98	2.2123	14 39 40.8	14.755
15	10 12 21.50	2.2050	14 24 53.6	14.817
16	10 14 33.58	2.1977	14 10 2.8	14.876
17	10 16 45.23	2.1906	13 55 8.5	14.934
18	10 18 56.45	2.1835	13 40 10.7	14.991
19	10 21 7.25	2.1765	13 25 9.6	15.045
20	10 23 17.63	2.1696	13 10 5.3	15.097
21	10 25 27.60	2.1628	12 54 57.9	15.148
22	10 27 37.16	2.1561	12 39 47.5	15.197
23	10 29 46.33	2.1495	12 24 34.2	15.245
24	10 31 55.10	2.1429	N.12 9 18.1	15.291

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 9.					MONDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	10 31 55.10	2.1429	N.12 9 18.1	15.291	0	12 9 6.46	1.9441	S. 0 29 19.6	15.814
1	10 34 3.48	2.1365	11 53 59.3	15.335	1	12 11 3.05	1.9423	0 45 7.9	15.795
2	10 36 11.48	2.1302	11 38 37.9	15.378	2	12 12 59.54	1.9407	1 0 55.0	15.775
3	10 38 19.10	2.1239	11 23 13.9	15.419	3	12 14 55.93	1.9391	1 16 40.9	15.754
4	10 40 26.35	2.1177	11 7 47.6	15.458	4	12 16 52.23	1.9375	1 32 25.5	15.732
5	10 42 33.23	2.1117	10 52 19.0	15.496	5	12 18 48.43	1.9360	1 48 8.7	15.709
6	10 44 39.76	2.1058	10 36 48.1	15.532	6	12 20 44.55	1.9348	2 3 50.6	15.686
7	10 46 45.93	2.0999	10 21 15.1	15.567	7	12 22 40.60	1.9336	2 19 31.0	15.660
8	10 48 51.75	2.0942	10 5 40.1	15.599	8	12 24 36.58	1.9324	2 35 9.8	15.633
9	10 50 57.23	2.0885	9 50 3.2	15.631	9	12 26 32.48	1.9312	2 50 47.0	15.606
10	10 53 2.37	2.0829	9 34 24.4	15.662	10	12 28 28.32	1.9302	3 6 22.5	15.578
11	10 55 7.18	2.0775	9 18 43.8	15.690	11	12 30 24.11	1.9294	3 21 56.4	15.550
12	10 57 11.67	2.0722	9 3 1.6	15.717	12	12 32 19.85	1.9286	3 37 28.5	15.519
13	10 59 15.84	2.0669	8 47 17.8	15.743	13	12 34 15.54	1.9278	3 52 58.7	15.488
14	11 1 19.69	2.0617	8 31 32.5	15.767	14	12 36 11.19	1.9272	4 8 27.1	15.457
15	11 3 23.24	2.0567	8 15 45.8	15.789	15	12 38 6.81	1.9267	4 23 53.5	15.423
16	11 5 26.49	2.0517	7 59 57.8	15.810	16	12 40 2.40	1.9262	4 39 17.9	15.389
17	11 7 29.44	2.0467	7 44 8.6	15.829	17	12 41 57.96	1.9258	4 54 40.2	15.355
18	11 9 32.09	2.0419	7 28 18.3	15.847	18	12 43 53.50	1.9255	5 10 0.5	15.320
19	11 11 34.46	2.0372	7 12 26.9	15.865	19	12 45 49.02	1.9253	5 25 18.6	15.282
20	11 13 36.56	2.0327	6 56 34.5	15.881	20	12 47 44.53	1.9252	5 40 34.4	15.244
21	11 15 38.39	2.0282	6 40 41.2	15.895	21	12 49 40.04	1.9252	5 55 47.9	15.205
22	11 17 39.95	2.0238	6 24 47.1	15.908	22	12 51 35.55	1.9252	6 10 59.0	15.166
23	11 19 41.25	2.0195	N. 6 8 52.2	15.920	23	12 53 31.06	1.9253	S. 6 26 7.8	15.126
	SUNDAY 10.					TUESDAY 12.			
0	11 21 42.29	2.0153	N. 5 52 56.7	15.930	0	12 55 26.58	1.9255	S. 6 41 14.1	15.084
1	11 23 43.08	2.0112	5 37 0.6	15.939	1	12 57 22.12	1.9257	6 56 17.9	15.042
2	11 25 43.64	2.0073	5 21 4.0	15.947	2	12 59 17.67	1.9260	7 11 19.1	14.998
3	11 27 43.96	2.0034	5 5 7.0	15.953	3	13 1 13.24	1.9264	7 26 17.6	14.954
4	11 29 44.05	1.9996	4 49 9.6	15 958	4	13 3 8.84	1.9270	7 41 13.5	14.909
5	11 31 43.91	1.9959	4 33 12.0	15.962	5	13 5 4.48	1.9276	7 56 6.7	14.862
6	11 33 43.56	1.9924	4 17 14.2	15.965	6	13 7 0.15	1.9283	8 10 57.0	14.815
7	11 35 43.00	1.9889	4 1 16.2	15.967	7	13 8 55.87	1.9290	8 25 44.5	14.767
8	11 37 42.23	1.9854	3 45 18.2	15.967	8	13 10 51.63	1.9297	8 40 29.1	14.718
9	11 39 41.25	1.9821	3 29 20.2	15.966	9	13 12 47.44	1.9306	8 55 10.7	14.668
10	11 41 40.08	1.9789	3 13 22.3	15.963	10	13 14 43.30	1.9316	9 9 49.3	14.617
11	11 43 38.72	1.9758	2 57 24.6	15.960	11	13 16 39.23	1.9327	9 24 24.8	14.566
12	11 45 37.18	1.9728	2 41 27.1	15.956	12	13 18 35.22	1.9338	9 38 57.2	14.513
13	11 47 35.46	1.9699	2 25 29.9	15.950	13	13 20 31.28	1.9349	9 53 26.4	14.460
14	11 49 33.57	1.9671	2 9 33.1	15.943	14	13 22 27.41	1.9362	10 7 52.4	14.406
15	11 51 31.51	1.9643	1 53 36.7	15.936	15	13 24 23.62	1.9375	10 22 15.1	14.351
16	11 53 29.29	1.9617	1 37 40.8	15.927	16	13 26 19.91	1.9388	10 36 34.5	14.295
17	11 55 26.92	1.9592	1 21 45.5	15.916	17	13 28 16.28	1.9402	10 50 50.5	14.237
18	11 57 24.40	1.9568	1 5 50.9	15.904	18	13 30 12.74	1.9418	11 5 3.0	14.179
19	11 59 21.74	1.9545	0 49 57.0	15.892	19	13 32 9.30	1.9434	11 19 12.0	14.121
20	12 1 18.94	1.9522	0 34 3.9	15.878	20	13 34 5.95	1.9450	11 33 17.5	14.061
21	12 3 16.00	1.9500	0 18 11.6	15.864	21	13 36 2.70	1.9468	11 47 19.3	13.999
22	12 5 12.94	1.9480	N. 0 2 20.2	15.848	22	13 37 59.56	1.9486	12 1 17.4	13.938
23	12 7 9.76	1.9460	S. 0 13 30.2	15.832	23	13 39 56.53	1.9504	12 15 11.9	13.876
24	12 9 6.46	1.9441	S. 0 29 19.6	15.814	24	13 41 53.60	1.9522	S. 12 29 2.6	13.813

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 41 53.60	1.9522	S.12 29 2.6	13.813
1	13 43 50.79	1.9542	12 42 49.5	13.749
2	13 45 48.11	1.9563	12 56 32.5	13.683
3	13 47 45.55	1.9584	13 10 11.5	13.617
4	13 49 43.12	1.9606	13 23 46.5	13.550
5	13 51 40.82	1.9628	13 37 17.5	13.483
6	13 53 38.65	1.9650	13 50 44.5	13.415
7	13 55 36.62	1.9673	14 4 7.3	13.344
8	13 57 34.73	1.9697	14 17 25.8	13.273
9	13 59 32.99	1.9722	14 30 40.1	13.202
10	14 1 31.39	1.9746	14 43 50.1	13.131
11	14 3 29.94	1.9771	14 56 55.8	13.058
12	14 5 28.65	1.9797	15 9 57.0	12.983
13	14 7 27.51	1.9824	15 22 53.7	12.908
14	14 9 26.54	1.9851	15 35 45.9	12.833
15	14 11 25.73	1.9878	15 48 33.6	12.757
16	14 13 25.08	1.9906	16 1 16.7	12.678
17	14 15 24.60	1.9935	16 13 55.0	12.599
18	14 17 24.30	1.9964	16 26 28.6	12.520
19	14 19 24.17	1.9993	16 38 57.4	12.440
20	14 21 24.22	2.0023	16 51 21.4	12.359
21	14 23 24.44	2.0053	17 3 40.5	12.277
22	14 25 24.85	2.0083	17 15 54.7	12.194
23	14 27 25.44	2.0113	S.17 28 3.8	12.109

THURSDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 29 26.21	2.0144	S.17 40 7.8	12.024
1	14 31 27.17	2.0176	17 52 6.7	11.939
2	14 33 28.33	2.0209	18 4 0.5	11.853
3	14 35 29.68	2.0242	18 15 49.1	11.766
4	14 37 31.23	2.0274	18 27 32.4	11.677
5	14 39 32.97	2.0307	18 39 10.4	11.588
6	14 41 34.91	2.0340	18 50 43.0	11.498
7	14 43 37.05	2.0374	19 2 10.2	11.407
8	14 45 39.40	2.0408	19 13 31.9	11.316
9	14 47 41.95	2.0442	19 24 48.1	11.223
10	14 49 44.70	2.0476	19 35 58.7	11.130
11	14 51 47.66	2.0511	19 47 3.7	11.035
12	14 53 50.83	2.0546	19 58 2.9	10.939
13	14 55 54.21	2.0581	20 8 56.4	10.843
14	14 57 57.80	2.0616	20 19 44.1	10.747
15	15 0 1.60	2.0652	20 30 26.0	10 649
16	15 2 5.62	2.0687	20 41 2.0	10.550
17	15 4 9.85	2.0722	20 51 32.0	10.450
18	15 6 14.29	2.0758	21 1 55.0	10.349
19	15 8 18.95	2.0795	21 12 13.9	10.248
20	15 10 23.83	2.0831	21 22 25.8	10.147
21	15 12 28.92	2.0867	21 32 31.5	10.043
22	15 14 34.23	2.0903	21 42 31.0	9.940
23	15 16 39.76	2.0940	21 52 24.3	9.835
24	15 18 45.51	2.0976	S.22 2 11.2	9.729

FRIDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 18 45.51	2.0976	S.22 2 11.2	9.729
1	15 20 51.48	2.1012	22 11 51.8	9.623
2	15 22 57.66	2.1048	22 21 26.0	9.516
3	15 25 4.06	2.1085	22 30 53.7	9.407
4	15 27 10.68	2.1121	22 40 14.9	9.298
5	15 29 17.52	2.1157	22 49 29.5	9.188
6	15 31 24.57	2.1193	22 58 37.5	9.078
7	15 33 31.84	2.1230	23 7 38.9	8.966
8	15 35 39.33	2.1266	23 16 33.5	8.854
9	15 37 47.03	2.1302	23 25 21.4	8.742
10	15 39 54.95	2.1337	23 34 2.5	8.628
11	15 42 3.08	2.1373	23 42 36.8	8.514
12	15 44 11.43	2.1409	23 51 4.2	8.398
13	15 46 19.99	2.1444	23 59 24.6	8.282
14	15 48 28.76	2.1478	24 7 38.0	8.166
15	15 50 37.73	2.1513	24 15 44.5	8.049
16	15 52 46.91	2.1548	24 23 43.9	7.930
17	15 54 56.31	2.1583	24 31 36.1	7.811
18	15 57 5.91	2.1617	24 39 21.2	7.692
19	15 59 15.71	2.1650	24 46 59.1	7.571
20	16 1 25.71	2.1684	24 54 29.7	7.449
21	16 3 35.92	2.1717	25 1 53.0	7.327
22	16 5 46.32	2.1749	25 9 9.0	7.205
23	16 7 56.91	2.1782	S.25 16 17.6	7.082

SATURDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 10 7.70	2.1814	S.25 23 18.9	6.959
1	16 12 18.68	2.1846	25 30 12.7	6.834
2	16 14 29.85	2.1877	25 36 59.0	6.708
3	16 16 41.20	2.1908	25 43 37.7	6.582
4	16 18 52.74	2.1938	25 50 8.9	6.456
5	16 21 4.46	2.1968	25 56 32.4	6.329
6	16 23 16.35	2.1997	26 2 48.3	6.201
7	16 25 28.42	2.2026	26 8 56.5	6.072
8	16 27 40.66	2.2054	26 14 57.0	5.943
9	16 29 53.07	2.2082	26 20 49.7	5.814
10	16 32 5.64	2.2109	26 26 34.7	5.684
11	16 34 18.37	2.2136	26 32 11.8	5.553
12	16 36 31.27	2.2162	26 37 41.1	5.422
13	16 38 44.32	2.2187	26 43 2.5	5.291
14	16 40 57.52	2.2212	26 48 16.0	5.158
15	16 43 10.86	2 2236	26 53 21.5	5.025
16	16 45 24.35	2.2260	26 58 19.0	4.892
17	16 47 37.98	2.2282	27 3 8.5	4.758
18	16 49 51.74	2.2304	27 7 50.0	4.624
19	16 52 5.63	2.2326	27 12 23.4	4.489
20	16 54 19.65	2.2347	27 16 48.7	4.355
21	16 56 33.80	2.2368	27 21 6.0	4.220
22	16 58 48.07	2.2387	27 25 15.1	4.084
23	17 1 2.45	2.2405	27 29 16.0	3.947
24	17 3 16.93	2.2423	S.27 33 8.7	3.810

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 3 16.93	2.2423	S.27 33 8.7	3.810
1	17 5 31.52	2.2440	27 36 53.2	3.673
2	17 7 46.21	2.2457	27 40 29.5	3.536
3	17 10 1.00	2.2472	27 43 57.5	3.398
4	17 12 15.88	2.2487	27 47 17.2	3.260
5	17 14 30.85	2.2501	27 50 28.7	3.122
6	17 16 45.89	2.2514	27 53 31.9	2.983
7	17 19 1.01	2.2527	27 56 26.7	2.844
8	17 21 16.21	2.2538	27 59 13.2	2.706
9	17 23 31.47	2.2548	28 1 51.4	2.567
10	17 25 46.79	2.2558	28 4 21.2	2.427
11	17 28 2.17	2.2567	28 6 42.6	2.288
12	17 30 17.60	2.2575	28 8 55.7	2.148
13	17 32 33.07	2.2582	28 11 0.4	2.008
14	17 34 48.59	2.2589	28 12 56.6	1.867
15	17 37 4.14	2.2594	28 14 44.4	1.727
16	17 39 19.72	2.2599	28 16 23.8	1.587
17	17 41 35.33	2.2602	28 17 54.8	1.447
18	17 43 50.95	2.2604	28 19 17.4	1.306
19	17 46 6.58	2.2606	28 20 31.5	1.165
20	17 48 22.23	2.2608	28 21 37.2	1.025
21	17 50 37.88	2.2608	28 22 34.5	0.885
22	17 52 53.52	2.2607	28 23 23.4	0.744
23	17 55 9.16	2.2605	S.28 24 3.8	0.603

MONDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 57 24.78	2.2602	S.28 24 35.8	0.463
1	17 59 40.38	2.2598	28 24 59.4	0.322
2	18 1 55.96	2.2594	28 25 14.5	0.182
3	18 4 11.51	2.2588	28 25 21.2	− 0.042
4	18 6 27.02	2.2582	28 25 19.5	+ 0.098
5	18 8 42.49	2.2575	28 25 9.4	0.239
6	18 10 57.92	2.2567	28 24 50.8	0.379
7	18 13 13.29	2.2558	28 24 23.9	0.518
8	18 15 28.61	2.2548	28 23 48.6	0.658
9	18 17 43.87	2.2537	28 23 4.9	0.797
10	18 19 59.06	2.2525	28 22 12.9	0.936
11	18 22 14.17	2.2512	28 21 12.6	1.075
12	18 24 29.21	2.2499	28 20 3.9	1.214
13	18 26 44.16	2.2485	28 18 46.9	1.353
14	18 28 59.03	2.2470	28 17 21.6	1.491
15	18 31 13.80	2.2454	28 15 48.0	1.628
16	18 33 28.47	2.2437	28 14 6.2	1.766
17	18 35 43.04	2.2419	28 12 16.1	1.903
18	18 37 57.50	2.2400	28 10 17.8	2.040
19	18 40 11.84	2.2381	28 8 11.3	2.177
20	18 42 26.07	2.2362	28 5 56.6	2.313
21	18 44 40.18	2.2341	28 3 33.8	2.448
22	18 46 54.16	2.2318	28 1 2.8	2.583
23	18 49 8.00	2.2295	27 58 23.8	2.718
24	18 51 21.70	2.2272	S.27 55 36.7	2.853

TUESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 51 21.70	2.2272	S.27 55 36.7	2.853
1	18 53 35.26	2.2248	27 52 41.5	2.987
2	18 55 48.67	2.2223	27 49 38.3	3.120
3	18 58 1.94	2.2198	27 46 27.1	3.253
4	19 0 15.05	2.2171	27 43 7.9	3.386
5	19 2 28.00	2.2144	27 39 40.8	3.519
6	19 4 40.78	2.2117	27 36 5.7	3.651
7	19 6 53.40	2.2088	27 32 22.7	3.782
8	19 9 5.84	2.2059	27 28 31.9	3.911
9	19 11 18.11	2.2030	27 24 33.4	4.040
10	19 13 30.20	2.2000	27 20 27.1	4.170
11	19 15 42.11	2.1969	27 16 13.0	4.299
12	19 17 53.83	2.1937	27 11 51.2	4.427
13	19 20 5.36	2.1905	27 7 21.7	4.555
14	19 22 16.69	2.1873	27 2 44.6	4.682
15	19 24 27.83	2.1840	26 57 59.9	4.808
16	19 26 38.77	2.1806	26 53 7.6	4.934
17	19 28 49.50	2.1771	26 48 7.8	5.059
18	19 31 0.02	2.1736	26 43 0.5	5.184
19	19 33 10.33	2.1701	26 37 45.7	5.307
20	19 35 20.43	2.1666	26 32 23.6	5.430
21	19 37 30.32	2.1630	26 26 54.1	5.552
22	19 39 39.99	2.1593	26 21 17.3	5.674
23	19 41 49.44	2.1556	S.26 15 33.2	5.796

WEDNESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 43 58.66	2.1518	S.26 9 41.8	5.917
1	19 46 7.65	2.1480	26 3 43.2	6.036
2	19 48 16.42	2.1442	25 57 37.5	6.154
3	19 50 24.96	2.1404	25 51 24.7	6.272
4	19 52 33.27	2.1365	25 45 4.8	6.390
5	19 54 41.34	2.1325	25 38 37.9	6.508
6	19 56 49.17	2.1285	25 32 3.9	6.624
7	19 58 56.76	2.1245	25 25 23.0	6.738
8	20 1 4.11	2.1206	25 18 35.3	6.853
9	20 3 11.23	2.1166	25 11 40.7	6.967
10	20 5 18.10	2.1125	25 4 39.3	7.079
11	20 7 24.73	2.1084	24 57 31.2	7.191
12	20 9 31.11	2.1042	24 50 16.4	7.302
13	20 11 37.24	2.1001	24 42 54.9	7.413
14	20 13 43.12	2.0960	24 35 26.8	7.523
15	20 15 48.76	2.0919	24 27 52.1	7.632
16	20 17 54.15	2.0877	24 20 10.9	7.740
17	20 19 59.29	2.0836	24 12 23.3	7.847
18	20 22 4.18	2.0794	24 4 29.2	7.954
19	20 24 8.82	2.0752	23 56 28.8	8.059
20	20 26 13.21	2.0710	23 48 22.1	8.165
21	20 28 17.34	2.0668	23 40 9.0	8.270
22	20 30 21.22	2.0626	23 31 49.7	8.373
23	20 32 24.85	2.0583	23 23 24.3	8.475
24	20 34 28.22	2.0541	S.23 14 52.7	8.577

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 34 28.22	2.0541	S.23 14 52.7	8.577
1	20 36 31.34	2.0499	23 6 15.0	8.678
2	20 38 34.21	2.0458	22 57 31.3	8.778
3	20 40 36.83	2.0416	22 48 41.7	8.877
4	20 42 39.20	2.0373	22 39 46.1	8.975
5	20 44 41.31	2.0331	22 30 44.7	9.073
6	20 46 43.17	2.0290	22 21 37.4	9.170
7	20 48 44.79	2.0248	22 12 24.3	9.266
8	20 50 46.15	2.0206	22 3 5.5	9.361
9	20 52 47.26	2.0164	21 53 41.0	9.456
10	20 54 48.12	2.0123	21 44 10.8	9.549
11	20 56 48.74	2.0082	21 34 35.1	9.642
12	20 58 49.11	2.0042	21 24 53.8	9.734
13	21 0 49.24	2.0001	21 15 7.0	9.825
14	21 2 49.12	1.9960	21 5 14.8	9.915
15	21 4 48.76	1.9920	20 55 17.2	10.004
16	21 6 48.16	1.9880	20 45 14.3	10.093
17	21 8 47.32	1.9840	20 35 6.1	10.181
18	21 10 46.24	1.9801	20 24 52.6	10.268
19	21 12 44.93	1.9762	20 14 33.9	10.354
20	21 14 43.38	1.9722	20 4 10.1	10.439
21	21 16 41.59	1.9683	19 53 41.2	10.524
22	21 18 39.57	1.9645	19 43 7.2	10.607
23	21 20 37.33	1.9607	S.19 32 28.3	10.690

FRIDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 22 34.86	1.9569	S.19 21 44.4	10.772
1	21 24 32.16	1.9532	19 10 55.6	10.854
2	21 26 29.24	1.9495	19 0 1.9	10.935
3	21 28 26.10	1.9458	18 49 3.4	11.015
4	21 30 22.74	1.9422	18 38 0.1	11.093
5	21 32 19.16	1.9385	18 26 52.2	11.171
6	21 34 15.36	1.9349	18 15 39.6	11.248
7	21 36 11.35	1.9314	18 4 22.4	11.325
8	21 38 7.13	1.9280	17 53 0.6	11.401
9	21 40 2.71	1.9246	17 41 34.3	11.476
10	21 41 58.08	1.9213	17 30 3.5	11.551
11	21 43 53.25	1.9179	17 18 28.2	11.625
12	21 45 48.22	1.9145	17 6 48.5	11.697
13	21 47 42.99	1.9112	16 55 4.5	11.768
14	21 49 37.57	1.9081	16 43 16.3	11.839
15	21 51 31.96	1.9049	16 31 23.8	11.910
16	21 53 26.16	1.9018	16 19 27.1	11.979
17	21 55 20.18	1.8988	16 7 26.3	12.048
18	21 57 14.02	1.8958	15 55 21.3	12.116
19	21 59 7.68	1.8928	15 43 12.3	12.183
20	22 1 1.16	1.8899	15 30 59.3	12.250
21	22 2 54.47	1.8871	15 18 42.3	12.316
22	22 4 47.61	1.8843	15 6 21.4	12.381
23	22 6 40.58	1.8815	14 53 56.6	12.446
24	22 8 33.39	1.8788	S.14 41 27.9	12.509

SATURDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 8 33.39	1.8788	S.14 41 27.9	12.509
1	22 10 26.04	1.8762	14 28 55.5	12.571
2	22 12 18.54	1.8736	14 16 19.4	12.633
3	22 14 10.88	1.8711	14 3 39.5	12.695
4	22 16 3.07	1.8687	13 50 56.0	12.755
5	22 17 55.12	1.8663	13 38 8.9	12.815
6	22 19 47.03	1.8640	13 25 18.2	12.874
7	22 21 38.80	1.8618	13 12 24.0	12.932
8	22 23 30.44	1.8596	12 59 26.3	12.990
9	22 25 21.95	1.8574	12 46 25.2	13.047
10	22 27 13.33	1.8553	12 33 20.7	13.103
11	22 29 4.58	1.8532	12 20 12.8	13.159
12	22 30 55.71	1.8512	12 7 1.6	13.213
13	22 32 46.73	1.8494	11 53 47.2	13.267
14	22 34 37.64	1.8476	11 40 29.6	13.321
15	22 36 28.44	1.8458	11 27 8.7	13.374
16	22 38 19.14	1.8441	11 13 44.7	13.425
17	22 40 9.74	1.8425	11 0 17.7	13.476
18	22 42 0.24	1.8409	10 46 47.6	13.527
19	22 43 50.65	1.8394	10 33 14.5	13.576
20	22 45 40.97	1.8380	10 19 38.5	13.624
21	22 47 31.21	1.8367	10 5 59.6	13.673
22	22 49 21.37	1.8354	9 52 17.8	13.721
23	22 51 11.46	1.8342	S. 9 38 33.1	13.768

SUNDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 53 1.48	1.8331	S. 9 24 45.6	13.814
1	22 54 51.43	1.8320	9 10 55.4	13.859
2	22 56 41.32	1.8310	8 57 2.5	13.904
3	22 58 31.15	1.8301	8 43 6.9	13.948
4	23 0 20.93	1.8292	8 29 8.7	13.991
5	23 2 10.66	1.8284	8 15 8.0	14.033
6	23 4 0.34	1.8277	8 1 4.7	14.076
7	23 5 49.98	1.8271	7 46 58.9	14.117
8	23 7 39.59	1.8266	7 32 50.7	14.157
9	23 9 29.17	1.8261	7 18 40.1	14.197
10	23 11 18.72	1.8257	7 4 27.1	14.236
11	23 13 8.25	1.8253	6 50 11.8	14.273
12	23 14 57.76	1.8251	6 35 54.3	14.311
13	23 16 47.26	1.8249	6 21 34.5	14.348
14	23 18 36.75	1.8248	6 7 12.5	14.384
15	23 20 26.24	1.8248	5 52 48.4	14.419
16	23 22 15.73	1.8249	5 38 22.2	14.454
17	23 24 5.23	1.8251	5 23 53.9	14.488
18	23 25 54.74	1.8253	5 9 23.6	14.522
19	23 27 44.27	1.8257	4 54 51.3	14.554
20	23 29 33.82	1.8260	4 40 17.1	14.586
21	23 31 23.39	1.8264	4 25 41.0	14.617
22	23 33 12.99	1.8270	4 11 3.1	14.647
23	23 35 2.63	1.8276	3 56 23.4	14.677
24	23 36 52.31	1.8283	S. 3 41 41.9	14.706

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 25.					**WEDNESDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	23 36 52.31	1.8283	S. 3 41 41.9	14.706	0	1 7 7.81	1.9679	N. 8 21 42.1	15.082
1	23 38 42.03	1.8292	3 26 58.7	14.734	1	1 9 6.04	1.9732	8 36 46.5	15.065
2	23 40 31.81	1.8301	3 12 13.9	14.761	2	1 11 4.59	1.9786	8 51 49.9	15.047
3	23 42 21.64	1.8310	2 57 27.4	14.787	3	1 13 3.47	1.9841	9 6 52.2	15.028
4	23 44 11.53	1.8321	2 42 39.4	14.812	4	1 15 2.68	1.9896	9 21 53.3	15.008
5	23 46 1.49	1.8332	2 27 49.9	14.837	5	1 17 2.22	1.9951	9 36 53.1	14.986
6	23 47 51.52	1.8344	2 12 58.9	14.862	6	1 19 2.09	2.0008	9 51 51.6	14.963
7	23 49 41.62	1.8357	1 58 6.5	14.885	7	1 21 2.31	2.0067	10 6 48.6	14.938
8	23 51 31.81	1.8371	1 43 12.7	14.908	8	1 23 2.89	2.0127	10 21 44.1	14.913
9	23 53 22.08	1.8386	1 28 17.5	14.931	9	1 25 3.83	2.0187	10 36 38.1	14.886
10	23 55 12.44	1.8402	1 13 21.0	14.952	10	1 27 5.13	2.0248	10 51 30.4	14.857
11	23 57 2.90	1.8419	0 58 23.3	14.971	11	1 29 6.80	2.0310	11 6 20.9	14.827
12	23 58 53.47	1.8436	0 43 24.5	14.990	12	1 31 8.85	2.0374	11 21 9.6	14.796
13	0 0 44.14	1.8454	0 28 24.5	15.009	13	1 33 11.29	2.0438	11 35 56.4	14.763
14	0 2 34.92	1.8473	S. 0 13 23.4	15.027	14	1 35 14.11	2.0502	11 50 41.2	14.729
15	0 4 25.82	1.8494	N. 0 1 38.7	15.043	15	1 37 17.32	2.0568	12 5 23.9	14.693
16	0 6 16.85	1.8515	0 16 41.8	15.060	16	1 39 20.93	2.0636	12 20 4.4	14.657
17	0 8 8.00	1.8536	0 31 45.9	15.076	17	1 41 24.95	2.0704	12 34 42.7	14.618
18	0 9 59.28	1.8558	0 46 50.9	15.091	18	1 43 29.38	2.0773	12 49 18.6	14.578
19	0 11 50.70	1.8582	1 1 56.8	15.104	19	1 45 34.23	2.0843	13 3 52.1	14.537
20	0 13 42.27	1.8607	1 17 3.4	15.116	20	1 47 39.50	2.0914	13 18 23.1	14.494
21	0 15 33.99	1.8633	1 32 10.7	15.128	21	1 49 45.20	2.0986	13 32 51.4	14.449
22	0 17 25.87	1.8659	1 47 18.7	15.139	22	1 51 51.33	2.1058	13 47 17.0	14.404
23	0 19 17.90	1.8686	N. 2 2 27.4	15.149	23	1 53 57.90	2.1132	N.14 1 39.9	14.357
	TUESDAY 26.					**THURSDAY 28.**			
0	0 21 10.10	1.8714	N. 2 17 36.6	15.158	0	1 56 4.92	2.1207	N.14 15 59.8	14.307
1	0 23 2.47	1.8743	2 32 46.3	15.166	1	1 58 12.39	2.1282	14 30 16.7	14.256
2	0 24 55.02	1.8774	2 47 56.5	15.174	2	2 0 20.31	2.1359	14 44 30.5	14.203
3	0 26 47.76	1.8806	3 3 7.2	15.181	3	2 2 28.70	2.1437	14 58 41.1	14.149
4	0 28 40.69	1.8838	3 18 18.2	15.186	4	2 4 37.56	2.1516	15 12 48.4	14.093
5	0 30 33.81	1.8870	3 33 29.5	15.191	5	2 6 46.89	2.1594	15 26 52.3	14.036
6	0 32 27.13	1.8904	3 48 41.1	15.194	6	2 8 56.69	2.1674	15 40 52.7	13.977
7	0 34 20.66	1.8939	4 3 52.8	15.197	7	2 11 6.98	2.1756	15 54 49.5	13.915
8	0 36 14.40	1.8975	4 19 4.7	15.199	8	2 13 17.76	2.1837	16 8 42.5	13.852
9	0 38 8.36	1.9012	4 34 16.7	15.200	9	2 15 29.02	2.1919	16 22 31.7	13.788
10	0 40 2.54	1.9049	4 49 28.7	15.199	10	2 17 40.78	2.2002	16 36 17.0	13.721
11	0 41 56.95	1.9088	5 4 40.6	15.197	11	2 19 53.05	2.2087	16 49 58.2	13.652
12	0 43 51.60	1.9128	5 19 52.4	15.195	12	2 22 5.83	2.2172	17 3 35.3	13.582
13	0 45 46.49	1.9169	5 35 4.0	15.192	13	2 24 19.12	2.2258	17 17 8.1	13.510
14	0 47 41.63	1.9210	5 50 15.4	15.187	14	2 26 32.93	2.2344	17 30 36.5	13.436
15	0 49 37.01	1.9252	6 5 26.5	15.182	15	2 28 47.25	2.2431	17 44 0.4	13.360
16	0 51 32.65	1.9296	6 20 37.3	15.176	16	2 31 2.10	2.2520	17 57 19.7	13.282
17	0 53 28.56	1.9341	6 35 47.6	15.168	17	2 33 17.49	2.2609	18 10 34.3	13.203
18	0 55 24.74	1.9386	6 50 57.4	15.159	18	2 35 33.41	2.2698	18 23 44.1	13.122
19	0 57 21.20	1.9432	7 6 6.7	15.149	19	2 37 49.87	2.2788	18 36 48.9	13.038
20	0 59 17.93	1.9479	7 21 15.3	15.138	20	2 40 6.87	2.2878	18 49 48.6	12.952
21	1 1 14.95	1.9528	7 36 23.2	15.126	21	2 42 24.41	2.2969	19 2 43.1	12.864
22	1 3 12.27	1.9578	7 51 30.4	15.112	22	2 44 42.50	2.3062	19 15 32.3	12.774
23	1 5 9.89	1.9628	8 6 36.7	15.097	23	2 47 1.15	2.3154	19 28 16.0	12.683
24	1 7 7.81	1.9679	N. 8 21 42.1	15.082	24	2 49 20.35	2.3247	N.19 40 54.2	12.589

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 49 20.35	2.3247	N.19 40 54.2	12.589
1	2 51 40.11	2.3341	19 53 26.7	12.493
2	2 54 0.44	2.3435	20 5 53.3	12.394
3	2 56 21.33	2.3529	20 18 14.0	12.294
4	2 58 42.79	2.3624	20 30 28.6	12.192
5	3 1 4.82	2.3720	20 42 37.0	12.088
6	3 3 27.43	2.3816	20 54 39.1	11.981
7	3 5 50.61	2.3912	21 6 34.7	11.872
8	3 8 14.37	2.4008	21 18 23.7	11.761
9	3 10 38.71	2.4105	21 30 6.0	11.648
10	3 13 3.63	2.4202	21 41 41.5	11.532
11	3 15 29.13	2.4299	21 53 9.9	11.414
12	3 17 55.21	2.4396	22 4 31.2	11.295
13	3 20 21.88	2.4493	22 15 45.3	11.173
14	3 22 49.13	2.4591	22 26 52.0	11.048
15	3 25 16.97	2.4688	22 37 51.1	10.922
16	3 27 45.39	2.4786	22 48 42.6	10.793
17	3 30 14.40	2.4884	22 59 26.3	10.662
18	3 32 44.00	2.4981	23 10 2.0	10.528
19	3 35 14.18	2.5078	23 20 29.7	10.392
20	3 37 44.94	2.5176	23 30 49.1	10.254
21	3 40 16.29	2.5273	23 41 0.2	10.114
22	3 42 48.22	2.5369	23 51 2.8	9.972
23	3 45 20.72	2.5465	N.24 0 56.8	9.827

SATURDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 47 53.80	2.5562	N.24 10 42.0	9.679
1	3 50 27.46	2.5658	24 20 18.3	9.530
2	3 53 1.69	2.5753	24 29 45.6	9.378
3	3 55 36.49	2.5848	24 39 3.7	9.224
4	3 58 11.86	2.5942	24 48 12.5	9.068
5	4 0 47.79	2.6036	24 57 11.9	8.910
6	4 3 24.29	2.6129	25 6 1.7	8.749
7	4 6 1.34	2.6221	25 14 41.8	8.586
8	4 8 38.94	2.6312	25 23 12.0	8.420
9	4 11 17.09	2.6403	25 31 32.2	8.253
10	4 13 55.78	2.6493	25 39 42.4	8.084
11	4 16 35.01	2.6582	25 47 42.3	7.912
12	4 19 14.76	2.6669	25 55 31.8	7.738
13	4 21 55.04	2.6756	26 3 10.8	7.562
14	4 24 35.84	2.6842	26 10 39.2	7.384
15	4 27 17.15	2.6927	26 17 56.9	7.204
16	4 29 58.96	2.7010	26 25 3.7	7.022
17	4 32 41.27	2.7093	26 31 59.5	6.837
18	4 35 24.07	2.7173	26 38 44.1	6.650
19	4 38 7.35	2.7253	26 45 17.5	6.462
20	4 40 51.10	2.7331	26 51 39.5	6.272
21	4 43 35.32	2.7407	26 57 50.1	6.080
22	4 46 19.99	2.7482	27 3 49.1	5.885
23	4 49 5.10	2.7555	27 9 36.3	5.688
24	4 51 50.65	2.7627	N.27 15 11.7	5.491

SUNDAY, JULY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 51 50.65	2.7627	N.27 15 11.7	5.491

PHASES OF THE MOON.

		d	h	m
● New Moon	June	3	10	56.4
☽ First Quarter		10	1	14.1
○ Full Moon		17	19	6.3
☾ Last Quarter		25	22	2.6

		d	h
☾ Perigee	June	4	17.7
☾ Apogee		19	22.8

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Fomalhaut	W.	67° 50′ 10″	2548	69° 30′ 16″	2527	71° 10′ 52″	2505	72° 51′ 58″	2485
	Mars	W.	52 5 56	2505	53 47 2	2488	55 28 32	2471	57 10 26	2455
	Sun	E.	33 33 41	2646	31 55 48	2632	30 17 37	2621	28 39 11	2611
5	Sun	W.	22 20 45	2408	24 4 9	2399	25 47 45	2393	27 31 30	2389
	Regulus	E.	51 55 30	2038	50 2 55	2041	48 10 25	2045	46 18 1	2050
	Saturn	E.	101 45 40	2031	99 52 54	2034	98 0 13	2037	96 7 37	2041
	Spica	E.	105 55 36	2030	104 2 49	2033	102 10 6	2036	100 17 28	2040
6	Sun	W.	36 10 39	2397	37 54 18	2402	39 37 50	2408	41 21 13	2415
	Regulus	E.	36 58 8	2083	35 6 43	2092	33 15 31	2101	31 24 34	2113
	Saturn	E.	86 46 28	2070	84 54 43	2078	83 3 10	2086	81 11 50	2095
	Spica	E.	90 56 10	2069	89 4 23	2077	87 12 48	2085	85 21 25	2094
7	Sun	W.	49 55 17	2461	51 37 25	2472	53 19 17	2484	55 0 53	2495
	Saturn	E.	71 58 45	2146	70 8 56	2158	68 19 25	2169	66 30 11	2182
	Spica	E.	76 8 4	2143	74 18 11	2155	72 28 35	2167	70 39 17	2178
8	Sun	W.	63 24 33	2561	65 4 21	2575	66 43 50	2590	68 22 59	2604
	Pollux	W.	29 15 24	2250	31 2 37	2264	32 49 30	2277	34 36 4	2290
	Saturn	E.	57 28 51	2249	55 41 36	2262	53 54 41	2277	52 8 7	2291
	Spica	E.	61 37 26	2243	59 50 2	2256	58 2 58	2270	56 16 15	2284
9	Sun	W.	76 33 41	2680	78 10 48	2695	79 47 35	2710	81 24 1	2725
	Pollux	W.	43 23 56	2359	45 8 30	2373	46 52 43	2387	48 36 36	2402
	Saturn	E.	43 20 46	2368	41 36 25	2383	39 52 26	2399	38 8 50	2416
	Spica	E.	47 27 47	2355	45 43 8	2370	43 58 50	2384	42 14 53	2398
	Antares	E.	93 21 47	2355	91 37 7	2369	89 52 48	2384	88 8 50	2398
10	Sun	W.	89 21 5	2803	90 55 29	2818	92 29 33	2834	94 3 17	2848
	Pollux	W.	57 10 54	2473	58 52 45	2487	60 34 17	2501	62 15 29	2515
	Regulus	W.	20 33 45	2507	22 14 49	2517	23 55 39	2527	25 36 15	2538
	Spica	E.	33 40 18	2471	31 58 24	2486	30 16 51	2499	28 35 37	2514
	Antares	E.	79 34 8	2470	77 52 12	2485	76 10 37	2499	74 29 22	2512
11	Sun	W.	101 47 8	2923	103 18 58	2938	104 50 29	2952	106 21 42	2965
	Pollux	W.	70 36 41	2583	72 15 59	2596	73 55 0	2609	75 33 43	2621
	Regulus	W.	33 55 23	2596	35 34 24	2607	37 13 9	2619	38 51 38	2632
	Antares	E.	66 7 53	2580	64 28 31	2593	62 49 27	2607	61 10 41	2620
12	Sun	W.	113 53 28	3034	115 22 59	3047	116 52 13	3060	118 21 11	3073
	Pollux	W.	83 43 3	2683	85 20 6	2695	86 56 53	2706	88 33 25	2717
	Regulus	W.	47 0 0	2690	48 36 53	2701	50 13 32	2712	51 49 56	2723
	Antares	E.	53 1 7	2681	51 24 1	2692	49 47 11	2704	48 10 36	2716
13	Regulus	W.	59 48 22	2775	61 23 22	2785	62 58 10	2795	64 32 45	2804
	Antares	E.	40 11 23	2769	38 36 14	2779	37 1 19	2788	35 26 36	2798
	α Aquilæ	E.	92 45 25	3581	91 26 30	3589	90 7 44	3599	88 49 9	3610
14	Regulus	W.	72 22 38	2849	73 56 2	2858	75 29 15	2866	77 2 18	2874
	Saturn	W.	22 52 28	2894	24 24 55	2897	25 57 18	2900	27 29 37	2903
	α Aquilæ	E.	82 19 22	3676	81 2 9	3691	79 45 12	3706	78 28 33	3725

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
1	Fomalhaut	W.	74° 33′ 32″	2465	76° 15′ 34″	2447	77° 58′ 2″	2429	79° 40′ 55″	2412
	Mars	W.	58 52 43	2438	60 35 23	2422	62 18 26	2407	64 1 51	2392
	Sun	E.	27 0 31	2603	25 21 40	2596	23 42 40	2593	22 3 35	2592
5	Sun	W.	29 15 20	2388	30 59 12	2388	32 43 4	2389	34 26 54	2393
	Regulus	E.	44 25 44	2055	42 33 35	2061	40 41 35	2068	38 49 46	2075
	Saturn	E.	94 15 7	2046	92 22 44	2051	90 30 29	2057	88 38 24	2063
	Spica	E.	98 24 56	2044	96 32 31	2050	94 40 15	2056	92 48 8	2062
6	Sun	W.	43 4 26	2423	44 47 28	2431	46 30 18	2441	48 12 55	2451
	Regulus	E.	29 33 54	2124	27 43 31	2136	25 53 27	2149	24 3 43	2165
	Saturn	E.	79 20 43	2105	77 29 51	2114	75 39 13	2124	73 48 51	2135
	Spica	E.	83 30 16	2102	81 39 20	2112	79 48 39	2122	77 58 13	2133
7	Sun	W.	56 42 13	2506	58 23 15	2520	60 4 0	2534	61 44 26	2548
	Saturn	E.	64 41 16	2194	62 52 40	2208	61 4 24	2220	59 16 27	2235
	Spica	E.	68 50 17	2191	67 1 36	2203	65 13 13	2216	63 25 10	2229
8	Sun	W.	70 1 48	2619	71 40 17	2635	73 18 25	2649	74 56 13	2664
	Pollux	W.	36 22 18	2304	38 8 12	2317	39 53 47	2331	41 39 2	2345
	Saturn	E.	50 21 55	2306	48 36 4	2322	46 50 36	2337	45 5 30	2352
	Spica	E.	54 29 52	2298	52 43 50	2312	50 58 8	2326	49 12 47	2341
9	Sun	W.	83 0 7	2741	84 35 52	2756	86 11 17	2772	87 46 21	2788
	Pollux	W.	50 20 8	2416	52 3 20	2431	53 46 11	2444	55 28 43	2459
	Saturn	E.	36 25 38	2432	34 42 49	2449	33 0 24	2466	31 18 23	2484
	Spica	E.	40 31 16	2414	38 48 1	2428	37 5 6	2443	35 22 32	2457
	Antares	E.	86 25 12	2412	84 41 55	2427	82 58 59	2441	81 16 23	2456
10	Sun	W.	95 36 42	2864	97 9 47	2879	98 42 33	2894	100 15 0	2909
	Pollux	W.	63 56 21	2528	65 36 55	2543	67 17 9	2556	68 57 4	2569
	Regulus	W.	27 16 36	2548	28 56 42	2560	30 36 32	2572	32 16 6	2584
	Spica	E.	26 54 43	2528	25 14 9	2542	23 33 54	2556	21 53 59	2569
	Antares	E.	72 48 26	2527	71 7 50	2540	69 27 32	2553	67 47 33	2567
11	Sun	W.	107 52 38	2980	109 23 16	2993	110 53 37	3007	112 23 41	3021
	Pollux	W.	77 12 9	2635	78 50 17	2646	80 28 9	2659	82 5 44	2671
	Regulus	W.	40 29 50	2643	42 7 47	2655	43 45 27	2667	45 22 51	2678
	Antares	E.	59 32 13	2632	57 54 2	2644	56 16 7	2657	54 38 29	2669
12	Sun	W.	119 49 54	3085	121 18 22	3098	122 46 34	3110	124 14 31	3123
	Pollux	W.	90 9 42	2729	91 45 44	2739	93 21 32	2750	94 57 6	2761
	Regulus	W.	53 26 5	2734	55 2 0	2744	56 37 41	2755	58 13 8	2765
	Antares	E.	46 34 17	2726	44 58 12	2738	43 22 22	2748	41 46 46	2758
13	Regulus	W.	66 7 8	2814	67 41 18	2823	69 15 16	2831	70 49 3	2841
	Antares	E.	33 52 6	2808	32 17 48	2818	30 43 43	2826	29 9 49	2835
	α Aquilæ	E.	87 30 45	3621	86 12 33	3634	84 54 35	3647	83 36 51	3661
14	Regulus	W.	78 35 10	2882	80 7 52	2890	81 40 24	2898	83 12 46	2905
	Saturn	W.	29 1 52	2908	30 34 1	2913	32 6 3	2919	33 37 58	2924
	α Aquilæ	E.	77 12 12	3744	75 56 11	3763	74 40 30	3784	73 25 11	3806

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	III^h.	P.L. of Diff.	VI^h.	P.L. of Diff.	IX^h.	P.L. of Diff.
15	Regulus	W.	84° 44′ 59″	2912	86° 17′ 3″	2920	87° 48′ 57″	2927	89° 20′ 42″	2933
	Saturn	W.	35 9 47	2929	36 41 29	2935	38 13 4	2940	39 44 32	2946
	Spica	W.	30 41 54	2909	32 14 2	2916	33 46 1	2923	35 17 51	2929
	α Aquilæ	E.	72 10 15	3828	70 55 42	3854	69 41 35	3879	68 27 54	3906
16	Regulus	W.	96 57 24	2965	98 28 21	2971	99 59 10	2977	101 29 52	2983
	Saturn	W.	47 20 7	2973	48 50 53	2978	50 21 33	2984	51 52 6	2989
	Spica	W.	42 54 58	2961	44 26 0	2967	45 56 54	2973	47 27 41	2978
	α Aquilæ	E.	62 26 53	4069	61 16 21	4108	60 6 27	4150	58 57 13	4193
	Fomalhaut	E.	85 44 35	3185	84 18 8	3193	82 51 50	3199	81 25 40	3208
17	Saturn	W.	59 23 19	3014	60 53 15	3018	62 23 6	3022	63 52 52	3026
	Spica	W.	54 59 54	3005	56 30 1	3009	58 0 3	3014	59 29 59	3018
	α Aquilæ	E.	53 22 17	4463	52 17 52	4528	51 14 25	4600	50 12 0	4676
	Fomalhaut	E.	74 17 12	3248	72 52 0	3257	71 26 58	3265	70 2 6	3276
	α Pegasi	E.	95 53 47	3294	94 29 28	3297	93 5 13	3301	91 41 3	3305
	Mars	E.	98 33 30	3247	97 8 16	3252	95 43 8	3256	94 18 5	3261
18	Saturn	W.	71 20 23	3046	72 49 39	3049	74 18 51	3053	75 47 58	3056
	Spica	W.	66 58 21	3038	68 27 47	3042	69 57 8	3045	71 26 25	3048
	Antares	W.	21 3 55	3038	22 33 21	3042	24 2 42	3045	25 31 59	3047
	Fomalhaut	E.	63 0 42	3328	61 37 3	3340	60 13 38	3352	58 50 27	3365
	α Pegasi	E.	84 41 25	3328	83 17 46	3333	81 54 13	3338	80 30 46	3345
	Mars	E.	87 14 11	3282	85 49 39	3286	84 25 11	3289	83 0 47	3293
19	Saturn	W.	83 12 41	3069	84 41 28	3072	86 10 12	3073	87 38 54	3076
	Spica	W.	78 51 54	3062	80 20 50	3065	81 49 43	3066	83 18 34	3068
	Antares	W.	32 57 31	3061	34 26 28	3064	35 55 22	3066	37 24 13	3068
	Fomalhaut	E.	51 58 35	3444	50 37 8	3463	49 16 2	3483	47 55 19	3505
	α Pegasi	E.	73 35 18	3377	72 12 35	3385	70 50 1	3393	69 27 36	3400
	Mars	E.	75 59 44	3307	74 35 41	3310	73 11 41	3312	71 47 43	3314
20	Spica	W.	90 42 22	3073	92 11 4	3074	93 39 45	3074	95 8 26	3075
	Antares	W.	44 48 1	3073	46 16 43	3074	47 45 24	3074	49 14 5	3074
	Fomalhaut	E.	41 18 29	3646	40 0 44	3683	38 43 39	3724	37 27 17	3770
	α Pegasi	E.	62 37 58	3448	61 16 36	3459	59 55 26	3471	58 34 29	3484
	Mars	E.	64 48 23	3390	63 24 35	3390	62 0 47	3391	60 37 0	3391
	α Arietis	E.	103 32 13	3112	102 4 18	3112	100 36 23	3112	99 8 28	3112
21	Antares	W.	56 37 36	3070	58 6 22	3069	59 35 9	3068	61 3 58	3065
	α Pegasi	E.	51 53 40	3563	50 34 25	3582	49 15 31	3604	47 57 1	3627
	Mars	E.	53 38 1	3318	52 14 10	3317	50 50 18	3315	49 26 24	3313
	α Arietis	E.	91 48 44	3107	90 20 43	3106	88 52 41	3104	87 24 36	3102
	Venus	E.	105 10 11	3537	103 50 28	3535	102 30 43	3534	101 10 56	3532
22	Antares	W.	68 28 52	3050	69 58 3	3046	71 27 19	3041	72 56 41	3037
	Mars	E.	42 26 10	3298	41 1 56	3294	39 37 38	3290	38 13 15	3286
	α Arietis	E.	80 3 28	3087	78 35 3	3084	77 6 34	3080	75 38 0	3076
	Venus	E.	94 31 16	3515	93 11 8	3511	91 50 56	3506	90 30 38	3501
23	Antares	W.	80 25 4	3008	81 55 7	3001	83 25 18	2993	84 55 39	2986
	α Aquilæ	W.	42 23 13	5429	43 14 47	5284	44 8 6	5152	45 3 4	5030

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^{h}.	P. L. of Diff.	XVIII^{h}.	P. L. of Diff.	XXI^{h}.	P. L. of Diff.
15	Regulus	W.	90° 52′ 19″	2939	92° 23′ 48″	2946	93° 55′ 8″	2953	95° 26′ 20″	2959
	Saturn	W.	41 15 53	2951	42 47 7	2957	44 18 14	2962	45 49 14	2968
	Spica	W.	36 49 33	2935	38 21 7	2942	39 52 32	2949	41 23 49	2955
	α Aquilæ	E.	67 14 40	3935	66 1 56	3965	64 49 42	3998	63 38 0	4033
16	Regulus	W.	103 0 26	2988	104 30 54	2993	106 1 15	2999	107 31 29	3004
	Saturn	W.	53 22 33	2993	54 52 54	2999	56 23 8	3003	57 53 17	3009
	Spica	W.	48 58 21	2984	50 28 54	2989	51 59 20	2994	53 29 40	2999
	α Aquilæ	E.	57 48 40	4240	56 40 52	4290	55 33 50	4343	54 27 37	4401
	Fomalhaut	E.	79 59 40	3215	78 33 49	3223	77 8 7	3231	75 42 35	3239
17	Saturn	W.	65 22 32	3030	66 52 7	3034	68 21 37	3039	69 51 2	3042
	Spica	W.	60 59 50	3022	62 29 35	3026	63 59 15	3030	65 28 50	3034
	α Aquilæ	E.	49 10 40	4759	48 10 30	4849	47 11 34	4946	46 13 56	5050
	Fomalhaut	E.	68 37 26	3285	67 12 57	3296	65 48 40	3306	64 24 35	3316
	α Pegasi	E.	90 16 57	3309	88 52 56	3313	87 29 0	3319	86 5 10	3323
	Mars	E.	92 53 8	3265	91 28 16	3270	90 3 30	3274	88 38 48	3278
18	Saturn	W.	77 17 2	3059	78 46 2	3062	80 14 58	3065	81 43 51	3067
	Spica	W.	72 55 38	3052	74 24 47	3054	75 53 53	3057	77 22 55	3060
	Antares	W.	27 1 13	3051	28 30 23	3054	29 59 29	3056	31 28 32	3060
	Fomalhaut	E.	57 27 31	3379	56 4 51	3394	54 42 28	3409	53 20 22	3426
	α Pegasi	E.	79 7 26	3351	77 44 13	3357	76 21 7	3364	74 58 9	3370
	Mars	E.	81 36 27	3296	80 12 11	3300	78 47 59	3302	77 23 50	3305
19	Saturn	W.	89 7 33	3078	90 36 10	3078	92 4 46	3080	93 33 20	3082
	Spica	W.	84 47 23	3069	86 16 10	3071	87 44 55	3072	89 13 39	3073
	Antares	W.	38 53 2	3069	40 21 49	3071	41 50 34	3072	43 19 18	3073
	Fomalhaut	E.	46 35 0	3528	45 15 7	3555	43 55 43	3582	42 36 49	3613
	α Pegasi	E.	68 5 20	3409	66 43 14	3418	65 21 18	3427	63 59 32	3438
	Mars	E.	70 23 48	3316	68 59 55	3317	67 36 3	3318	66 12 12	3319
20	Spica	W.	96 37 6	3074	98 5 47	3074	99 34 28	3073	101 3 10	3072
	Antares	W.	50 42 46	3074	52 11 27	3073	53 40 9	3073	55 8 52	3072
	Fomalhaut	E.	36 11 44	3821	34 57 4	3878	33 43 22	3943	32 30 46	4015
	α Pegasi	E.	57 13 47	3497	55 53 20	3512	54 33 9	3527	53 13 15	3545
	Mars	E.	59 13 13	3321	57 49 26	3320	56 25 38	3320	55 1 50	3319
	α Arietis	E.	97 40 33	3111	96 12 37	3111	94 44 41	3110	93 16 43	3109
21	Antares	W.	62 32 50	3063	64 1 45	3060	65 30 43	3057	66 59 45	3053
	α Pegasi	E.	46 38 56	3653	45 21 19	3681	44 4 12	3712	42 47 38	3746
	Mars	E.	48 2 27	3310	46 38 27	3308	45 14 25	3305	43 50 19	3302
	α Arietis	E.	85 56 29	3100	84 28 19	3096	83 0 5	3094	81 31 48	3091
	Venus	E.	99 51 7	3529	98 31 15	3525	97 11 19	3523	95 51 20	3518
22	Antares	W.	74 26 8	3031	75 55 42	3026	77 25 22	3021	78 55 9	3014
	Mars	E.	36 48 47	3281	35 24 13	3276	33 59 34	3271	32 34 49	3265
	α Arietis	E.	74 9 21	3071	72 40 36	3067	71 11 46	3061	69 42 49	3056
	Venus	E.	89 10 15	3496	87 49 46	3489	86 29 10	3484	85 8 28	3477
23	Antares	W.	86 26 9	2978	87 56 49	2969	89 27 40	2961	90 58 42	2952
	α Aquilæ	W.	45 59 36	4917	46 57 37	4811	47 57 4	4715	48 57 51	4625

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
23	Mars	E.	31° 9′ 57″	3959	29° 44′ 58″	3954	28° 19′ 53″	3947	26° 54′ 40″	3942
	α Arietis	E.	68 13 46	3051	66 44 36	3044	65 15 18	3039	63 45 53	3031
	Venus	E.	83 47 38	3471	82 26 41	3463	81 5 35	3454	79 44 20	3447
	Aldebaran	E.	99 2 55	3074	97 34 14	3068	96 5 25	3060	94 36 26	3052
	Sun	E.	122 59 7	3392	121 36 41	3384	120 14 6	3376	118 51 22	3366
24	Antares	W.	92 29 55	2942	94 1 20	2932	95 32 58	2922	97 4 49	2911
	α Aquilæ	W.	49 59 54	4541	51 3 10	4462	52 7 36	4389	53 13 7	4319
	α Arietis	E.	56 16 39	2996	54 46 21	2988	53 15 53	2980	51 45 15	2972
	Venus	E.	72 55 45	3401	71 33 30	3391	70 11 3	3379	68 48 23	3369
	Aldebaran	E.	87 8 59	3009	85 38 57	2998	84 8 42	2989	82 38 15	2978
	Jupiter	E.	97 29 19	3043	95 59 59	3033	94 30 27	3022	93 0 42	3011
	Sun	E.	111 54 58	3317	110 31 6	3306	109 7 1	3294	107 42 42	3283
25	α Aquilæ	W.	58 55 40	4027	60 6 53	3978	61 18 54	3931	62 31 42	3886
	α Arietis	E.	44 9 27	2929	42 37 45	2921	41 5 53	2912	39 33 50	2905
	Venus	E.	61 51 46	3307	60 27 43	3294	59 3 25	3281	57 38 51	3267
	Aldebaran	E.	75 2 39	2923	73 30 49	2911	71 58 44	2899	70 26 24	2887
	Jupiter	E.	85 28 21	2950	83 57 6	2938	82 25 35	2924	80 53 47	2910
	Sun	E.	100 37 31	3216	99 11 41	3203	97 45 35	3188	96 19 11	3173
26	α Aquilæ	W.	68 46 37	3686	70 3 37	3653	71 21 14	3620	72 39 27	3587
	Fomalhaut	W.	38 50 40	3344	40 14 1	3288	41 38 26	3238	43 3 50	3190
	Venus	E.	50 31 50	3193	49 5 33	3178	47 38 58	3163	46 12 5	3148
	Aldebaran	E.	62 40 42	2823	61 6 44	2810	59 32 29	2797	57 57 57	2784
	Jupiter	E.	73 10 14	2837	71 36 34	2821	70 2 33	2805	68 28 12	2788
	Sun	E.	89 2 36	3093	87 34 18	3077	86 5 40	3059	84 36 40	3042
27	α Aquilæ	W.	79 18 59	3443	80 40 27	3417	82 2 24	3393	83 24 49	3368
	Fomalhaut	W.	50 24 4	2989	51 54 30	2955	53 25 39	2921	54 57 31	2890
	Venus	E.	38 52 59	3071	37 24 14	3057	35 55 12	3043	34 25 52	3029
	Aldebaran	E.	50 1 2	2721	48 24 50	2709	46 48 22	2698	45 11 39	2687
	Jupiter	E.	60 31 1	2705	58 54 28	2688	57 17 32	2671	55 40 13	2653
	Sun	E.	77 6 10	2950	75 34 54	2931	74 3 15	2912	72 31 12	2893
28	Fomalhaut	W.	62 46 40	2744	64 22 21	2717	65 58 38	2692	67 35 29	2666
	α Pegasi	W.	42 40 42	3114	44 8 35	3056	45 37 38	3002	47 7 48	2952
	Mars	W.	29 8 41	2680	30 45 48	2658	32 23 24	2638	34 1 27	2617
	Aldebaran	E.	37 5 1	2652	35 27 17	2650	33 49 30	2652	32 11 45	2656
	Jupiter	E.	47 27 44	2567	45 48 4	2550	44 8 0	2533	42 27 33	2517
	Sun	E.	64 44 44	2796	63 10 11	2777	61 35 13	2757	59 59 49	2738
29	Fomalhaut	W.	75 47 57	2551	77 28 0	2530	79 8 32	2509	80 49 33	2489
	α Pegasi	W.	54 53 20	2743	56 29 3	2707	58 5 33	2674	59 42 48	2642
	Mars	W.	42 18 44	2517	43 59 34	2497	45 40 51	2478	47 22 35	2460
	Jupiter	E.	33 59 53	2444	32 17 21	2431	30 34 31	2422	28 51 27	2412
	Sun	E.	51 56 31	2644	50 18 36	2626	48 40 17	2609	47 1 34	2592
30	Fomalhaut	W.	89 21 15	2401	91 4 48	2386	92 48 43	2372	94 32 58	2358
	α Pegasi	W.	67 59 9	2505	69 40 15	2482	71 21 53	2460	73 4 2	2440
	Mars	W.	55 57 44	2371	57 42 1	2355	59 26 41	2338	61 11 45	2323
	Sun	E.	38 42 23	2515	37 1 31	2502	35 20 21	2490	33 38 54	2480

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
23	MARS	E.	25° 29′ 21″	3236	24° 3′ 55″	3230	22° 38′ 21″	3224	21° 12′ 40″	3217
	α Arietis	E.	62 16 19	3025	60 46 37	3018	59 16 47	3011	57 46 48	3003
	VENUS	E.	78 22 57	3438	77 1 24	3431	75 39 42	3421	74 17 49	3411
	Aldebaran	E.	93 7 18	3043	91 37 59	3035	90 8 30	3026	88 38 50	3018
	SUN	E.	117 28 27	3357	116 5 21	3348	114 42 5	3338	113 18 37	3328
24	Antares	W.	98 36 54	2900	100 9 13	2889	101 41 46	2876	103 14 35	2865
	α Aquilæ	W.	54 19 42	4254	55 27 17	4193	56 35 50	4135	57 45 18	4079
	α Arietis	E.	50 14 27	2963	48 43 28	2955	47 12 19	2946	45 40 58	2938
	VENUS	E.	67 25 31	3358	66 2 26	3345	64 39 7	3333	63 15 34	3320
	Aldebaran	E.	81 7 35	2968	79 36 42	2957	78 5 35	2946	76 34 14	2935
	JUPITER	E.	91 30 43	3000	90 0 30	2988	88 30 2	2976	86 59 19	2964
	SUN	E.	106 18 10	3270	104 53 23	3257	103 28 21	3244	102 3 4	3231
25	α Aquilæ	W.	63 45 16	3843	64 59 34	3802	66 14 34	3762	67 30 16	3725
	α Arietis	E.	38 1 38	2898	36 29 17	2891	34 56 47	2886	33 24 10	2880
	VENUS	E.	56 14 1	3253	54 48 54	3238	53 23 30	3224	51 57 49	3209
	Aldebaran	E.	68 53 48	2874	67 20 56	2862	65 47 48	2848	64 14 23	2836
	JUPITER	E.	79 21 41	2896	77 49 17	2882	76 16 35	2867	74 43 34	2852
	SUN	E.	94 52 30	3158	93 25 30	3142	91 58 11	3126	90 30 33	3110
26	α Aquilæ	W.	73 58 16	3555	75 17 39	3526	76 37 34	3497	77 58 1	3470
	Fomalhaut	W.	44 30 11	3146	45 57 25	3104	47 25 30	3064	48 54 24	3026
	VENUS	E.	44 44 53	3132	43 17 22	3117	41 49 33	3101	40 21 25	3087
	Aldebaran	E.	56 23 8	2771	54 48 2	2758	53 12 39	2745	51 36 59	2732
	JUPITER	E.	66 53 29	2772	65 18 25	2756	63 42 59	2739	62 7 11	2722
	SUN	E.	83 7 19	3024	81 37 36	3005	80 7 30	2988	78 37 2	2969
27	α Aquilæ	W.	84 47 42	3346	86 11 0	3325	87 34 43	3304	88 58 50	3284
	Fomalhaut	W.	56 30 3	2859	58 3 15	2828	59 37 6	2799	61 11 35	2772
	VENUS	E.	32 56 15	3016	31 26 22	3004	29 56 14	2993	28 25 53	2985
	Aldebaran	E.	43 31 42	2678	41 57 32	2669	40 20 11	2662	38 42 40	2656
	JUPITER	E.	54 2 30	2636	52 24 24	2618	50 45 54	2601	49 7 1	2584
	SUN	E.	70 58 44	2873	69 25 51	2855	67 52 34	2835	66 18 52	2815
28	Fomalhaut	W.	69 12 54	2642	70 50 52	2618	72 29 22	2595	74 8 24	2572
	α Pegasi	W.	48 39 1	2905	50 11 14	2861	51 44 23	2819	53 18 26	2780
	MARS	W.	35 39 59	2596	37 18 59	2577	38 58 26	2556	40 38 21	2536
	Aldebaran	E.	30 34 6	2665	28 56 39	2679	27 19 31	2699	25 42 50	2727
	JUPITER	E.	40 46 44	2502	39 5 33	2486	37 24 0	2471	35 42 6	2458
	SUN	E.	58 24 0	2719	56 47 46	2700	55 11 6	2682	53 34 1	2663
29	Fomalhaut	W.	82 31 2	2470	84 12 58	2452	85 55 19	2434	87 38 5	2417
	α Pegasi	W.	61 20 46	2612	62 59 24	2583	64 38 42	2556	66 18 37	2530
	MARS	W.	49 4 45	2441	50 47 22	2423	52 30 24	2405	54 13 52	2388
	JUPITER	E.	27 8 10	2406	25 24 44	2403	23 41 13	2402	21 57 41	2405
	SUN	E.	45 22 28	2575	43 42 59	2559	42 3 8	2544	40 22 56	2529
30	Fomalhaut	W.	96 17 33	2346	98 2 26	2335	99 47 35	2324	101 33 0	2315
	α Pegasi	W.	74 46 40	2420	76 29 46	2402	78 13 18	2384	79 57 15	2368
	MARS	W.	62 57 11	2308	64 42 59	2294	66 29 8	2279	68 15 38	2266
	SUN	E.	31 57 12	2470	30 15 16	2462	28 33 10	2456	26 50 55	2453

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.	Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
SUN.	1	6 41 42.14	10.344	N.23 6 33.0	−10.30	15 46.17	68.77	3 35.52	0.486
Mon.	2	6 45 50.27	10.333	23 2 13.6	11.31	15 46.16	68.73	3 47.06	0.475
Tues.	3	6 49 58.11	10.321	22 57 29.9	12.31	15 46.16	68.69	3 58.31	0.463
Wed.	4	6 54 5.66	10.308	22 52 22.2	−13.31	15 46.16	68.65	4 9.27	0.450
Thur.	5	6 58 12.88	10.294	22 46 50.6	14.31	15 46.17	68.61	4 19.91	0.436
Frid.	6	7 2 19.75	10.279	22 40 55.2	15.30	15 46.19	68.56	4 30.19	0.421
Sat.	7	7 6 26.25	10.263	22 34 36.2	−16.28	15 46.21	68.51	4 40.10	0.405
SUN.	8	7 10 32.35	10.246	22 27 53.7	17.25	15 46.24	68.45	4 49.62	0.388
Mon.	9	7 14 38.01	10.228	22 20 48.0	18.22	15 46.27	68.40	4 58.72	0.370
Tues.	10	7 18 43.28	10.209	22 13 19.1	−19.18	15 46.31	68.34	5 7.39	0.352
Wed.	11	7 22 48.08	10.190	22 5 27.3	20.13	15 46.35	68.28	5 15.60	0.333
Thur.	12	7 26 52.42	10.170	21 57 12.8	21.08	15 46.39	68.22	5 23.36	0.313
Frid.	13	7 30 56.27	10.150	21 48 35.8	−22.01	15 46.44	68.15	5 30.64	0.293
Sat.	14	7 34 59.63	10.129	21 39 36.5	22.93	15 46.49	68.08	5 37.42	0.272
SUN.	15	7 39 2.48	10.108	21 30 15.0	23.85	15 46.55	68.01	5 43.69	0.251
Mon.	16	7 43 4.82	10.087	21 20 31.7	−24.76	15 46.61	67.94	5 49.46	0.230
Tues.	17	7 47 6.64	10.065	21 10 26.6	25.66	15 46.67	67.87	5 54.71	0.208
Wed.	18	7 51 7.93	10.043	21 0 0.1	26.55	15 46.73	67.80	5 59.42	0.186
Thur.	19	7 55 8.68	10.021	20 49 12.3	−27.43	15 46.80	67.72	6 3.61	0.163
Frid.	20	7 59 8.89	9.998	20 38 3.5	28.30	15 46 87	67.63	6 7.25	0.141
Sat.	21	8 3 8.55	9.975	20 26 33.8	29.16	15 46.95	67.55	6 10.35	0.118
SUN.	22	8 7 7.66	9.952	20 14 43.5	−30.01	15 47.03	67.47	6 12.89	0.095
Mon.	23	8 11 6.21	9.928	20 2 33.0	30.86	15 47.11	67.39	6 14.88	0.071
Tues.	24	8 15 4.20	9.904	19 50 2.2	31.70	15 47.19	67.31	6 16.30	0.048
Wed.	25	8 19 1.62	9.880	19 37 11.5	−32.52	15 47.28	67.22	6 17.17	0.024
Thur.	26	8 22 58.47	9.856	19 24 1.2	33.33	15 47.38	67.14	6 17.45	0.000
Frid.	27	8 26 54.73	9.832	19 10 31.6	34.13	15 47.47	67.06	6 17.16	0.024
Sat.	28	8 30 50.41	9.808	18 56 42.8	−34.92	15 47.57	66.97	6 16.28	0.048
SUN.	29	8 34 45.50	9.783	18 42 35.2	35.70	15 47.68	66.88	6 14.82	0.073
Mon.	30	8 38 40.00	9.758	18 28 9.1	36.47	15 47.79	66.80	6 12.77	0.098
Tues.	31	8 42 33.90	9.733	18 13 24.7	37.22	15 47.91	66.71	6 10.12	0.123
Wed.	32	8 46 27.20	9.708	N.17 58 22.4	−37.96	15 48.03	66.62	6 6.87	0.148

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.19$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
SUN.	1	6 41 41.52	10.343	N. 23 6 33.6	−10.30	3 35.49	0.486	6 38 6.03
Mon.	2	6 45 49.61	10.332	23 2 14.2	11.31	3 47.03	0.475	6 42 2.59
Tues.	3	6 49 57.43	10.320	22 57 30.7	12.31	3 58.28	0.463	6 45 59.14
Wed.	4	6 54 4.95	10.307	22 52 23.2	−13.31	4 9.24	0.450	6 49 55.70
Thur.	5	6 58 12.14	10.293	22 46 51.6	14.31	4 19.88	0.436	6 53 52.26
Frid.	6	7 2 18.98	10.278	22 40 56.4	15.30	4 30.16	0.421	6 57 48.82
Sat.	7	7 6 25.45	10.262	22 34 37.4	−16.28	4 40.07	0.405	7 1 45.38
SUN.	8	7 10 31.53	10.245	22 27 55.1	17.25	4 49.59	0.388	7 5 41.94
Mon.	9	7 14 37.19	10.227	22 20 49.4	18.22	4 58.69	0.370	7 9 38.50
Tues.	10	7 18 42.41	10.208	22 13 20.7	−19.18	5 7.36	0.352	7 13 35.06
Wed.	11	7 22 47.19	10.189	22 5 29.1	20.13	5 15.58	0.333	7 17 31.61
Thur.	12	7 26 51.51	10.169	21 57 14.7	21.07	5 23.33	0.313	7 21 28.17
Frid.	13	7 30 55.34	10.149	21 48 37.8	−22.00	5 30.61	0.293	7 25 24.73
Sat.	14	7 34 58.68	10.128	21 39 38.6	22.92	5 37.39	0.272	7 29 21.29
SUN.	15	7 39 1.52	10.107	21 30 17.3	23.84	5 43.67	0.251	7 33 17.85
Mon.	16	7 43 3.84	10.086	21 20 34.0	−24.75	5 49.44	0.230	7 37 14.40
Tues.	17	7 47 5.65	10.064	21 10 29.1	25.65	5 54.69	0.208	7 41 10.96
Wed.	18	7 51 6.92	10.042	21 0 2.7	26.54	5 59.40	0.186	7 45 7.52
Thur.	19	7 55 7.67	10.020	20 49 15.0	−27.42	6 3.59	0.163	7 49 4.08
Frid.	20	7 59 7.87	9.997	20 38 6.3	28.29	6 7.24	0.141	7 53 0.64
Sat.	21	8 3 7.53	9.974	20 26 36.8	29.16	6 10.33	0.118	7 56 57.19
SUN.	22	8 7 6.63	9.951	20 14 46.6	−30.01	6 12.88	0.095	8 0 53.75
Mon.	23	8 11 5.18	9.928	20 2 36.1	30.86	6 14.87	0.071	8 4 50.31
Tues.	24	8 15 3.16	9.904	19 50 5.4	31.70	6 16.30	0.048	8 8 46.87
Wed.	25	8 19 0.59	9.880	19 37 14.9	−32.52	6 17.16	0.024	8 12 43.42
Thur.	26	8 22 57.43	9.856	19 24 4.7	33.33	6 17.45	0.000	8 16 39.98
Frid.	27	8 26 53.70	9.832	19 10 35.1	34.13	6 17.16	0.024	8 20 36.54
Sat.	28	8 30 49.38	9.808	18 56 46.4	−34.92	6 16.29	0.048	8 24 33.10
SUN.	29	8 34 44.48	9.784	18 42 38.9	35.70	6 14.83	0.073	8 28 29.65
Mon.	30	8 38 38.99	9.759	18 28 12.8	36.47	6 12.78	0.098	8 32 26.21
Tues.	31	8 42 32.90	9.734	18 13 28.5	37.22	6 10.13	0.123	8 36 22.77
Wed.	32	8 46 26.21	9.709	N. 17 58 26.2	−37.96	6 6.88	0.148	8 40 19.32

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign − prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	182	99 35 2.3	34 38.5	143.06	+ 0.42	0.0072074	+ 1.9	17 19 3.28
2	183	100 32 15.9	31 51.9	143.06	0.44	0.0072106	+ 0.8	17 15 7.37
3	184	101 29 29.3	29 5.1	143.06	0.43	0.0072112	- 0.3	17 11 11.46
4	185	102 26 42.9	26 18.5	143.06	+ 0.38	0.0072091	- 1.4	17 7 15.54
5	186	103 23 56.4	23 31.8	143.06	0.32	0.0072043	2.5	17 3 19.63
6	187	104 21 9.8	20 45.0	143.06	0.23	0.0071970	3.6	16 59 23.72
7	188	105 18 23.2	17 58.2	143.05	+ 0.12	0.0071872	- 4.6	16 55 27.80
8	189	106 15 36.5	15 11.3	143.05	+ 0.01	0.0071749	5.6	16 51 31.89
9	190	107 12 49.7	12 24.4	143.05	− 0.13	0.0071605	6.5	16 47 35.98
10	191	108 10 2.8	9 37.3	143.05	− 0.25	0.0071438	- 7.4	16 43 40.07
11	192	109 7 15.9	6 50.2	143.05	0.37	0.0071251	8.2	16 39 44.16
12	193	110 4 29.0	4 3.1	143.05	0.49	0.0071044	9.0	16 35 48.24
13	194	111 1 42.1	1 16.0	143.05	− 0.57	0.0070821	- 9.7	16 31 52.33
14	195	111 58 55.2	58 28.9	143.05	0.63	0.0070580	10.4	16 27 56.42
15	196	112 56 8.7	55 42.2	143.06	0.67	0.0070324	11.0	16 24 0.51
16	197	113 53 22.3	52 55.7	143.07	− 0.68	0.0070053	-11.6	16 20 4.59
17	198	114 50 36.2	50 9.4	143.09	0.64	0.0069767	12.2	16 16 8.68
18	199	115 47 50.7	47 23.7	143.11	0.59	0.0069468	12.7	16 12 12.77
19	200	116 45 5.6	44 38.4	143.13	− 0.51	0.0069156	-13.3	16 8 16.86
20	201	117 42 21.1	41 53.8	143.16	0.40	0.0068829	13.9	16 4 20.95
21	202	118 39 37.3	39 9.8	143.19	0.28	0.0068488	14.5	16 0 25.04
22	203	119 36 54.3	36 26.6	143.22	− 0.15	0.0068132	-15.2	15 56 29.12
23	204	120 34 12.1	33 44.2	143.26	− 0.01	0.0067759	15.9	15 52 33.21
24	205	121 31 30.8	31 2.8	143.30	+ 0.12	0.0067369	16.6	15 48 37.30
25	206	122 28 50.5	28 22.3	143.34	+ 0.25	0.0066962	-17.4	15 44 41.39
26	207	123 26 11.1	25 42.7	143.38	0.36	0.0066536	18.2	15 40 45.48
27	208	124 23 32.8	23 4.2	143.42	0.44	0.0066087	19.1	15 36 49.56
28	209	125 20 55.5	20 26.8	143.46	+ 0.50	0.0065620	-20.0	15 32 53.65
29	210	126 18 19.1	17 50.2	143.51	0.53	0.0065128	20.9	15 28 57.74
30	211	127 15 43.9	15 14.8	143.55	0.53	0.0064615	22.0	15 25 1.83
31	212	128 13 9.7	12 40.5	143.59	0.48	0.0064074	23.0	15 21 5.92
32	213	129 10 36.3	10 6.9	143.63	+ 0.42	0.0063511	-24.0	15 17 10.01

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 33.5	16 38.2	60 39.8	+1.57	60 56.8	+1.24	23 15.7	2.82	27.5
2	16 41.6	16 43.9	61 9.6	0.88	61 17.8	+0.48	δ		28.5
3	16 44.7	16 44.3	61 21.0	+0.06	61 19.2	−0.35	0 23.7	2.80	0.3
4	16 42.4	16 39.4	61 12.5	−0.75	61 1.3	−1.11	1 28.9	2.61	1.3
5	16 35.2	16 30.0	60 45.8	1.44	60 26.7	1.72	2 28.8	2.38	2.3
6	16 23.9	16 17.3	60 4.6	1.94	59 40.2	2.10	3 23.1	2.16	3.3
7	16 10.2	16 2.8	59 14.1	−2.21	58 47.1	−2.27	4 12.7	1.98	4.3
8	15 55.4	15 48.0	58 19.7	2.28	57 52.5	2.24	4 59.0	1.89	5.3
9	15 40.8	15 33.8	57 26.0	2.17	57 0.4	2.08	5 43.8	1.85	6.3
10	15 27.2	15 21.0	56 36.1	−1.96	56 13.3	−1.82	6 28.2	1.86	7.3
11	15 15.3	15 10.0	55 52.4	1.67	55 33.2	1.53	7 13.6	1.92	8.3
12	15 5.3	15 1.1	55 15.8	1.38	55 0.2	1.22	8 0.7	2.01	9.3
13	14 57.4	14 54.1	54 46.6	−1.06	54 34.8	−0.92	8 49.9	2.09	10.3
14	14 51.4	14 49.1	54 24.6	0.77	54 16.3	0.63	9 40.9	2.15	11.3
15	14 47.2	14 45.8	54 9.4	0.50	54 4.2	0.38	10 32.7	2.16	12.3
16	14 44.8	14 44.1	54 0.4	−0.26	53 58.0	−0.14	11 24.2	2.12	13.3
17	14 43.9	14 44.0	53 57.0	−0.03	53 57.4	+0.09	12 14.0	2.03	14.3
18	14 44.5	14 45.3	53 59.2	+0.20	54 2.2	0.31	13 1.4	1.92	15.3
19	14 46.5	14 48.1	54 6.7	+0.43	54 12.6	+0.55	13 46.3	1.82	16.3
20	14 50.1	14 52.5	54 19.8	0.67	54 28.6	0.80	14 28.8	1.73	17.3
21	14 55.3	14 58.5	54 38.9	0.93	54 50.9	1.07	15 9.9	1.70	18.3
22	15 2.2	15 6.4	55 4.5	+1.21	55 19.9	+1.35	15 50.6	1.70	19.3
23	15 11.0	15 16.2	55 36.8	1.50	55 55.8	1.64	16 31.9	1.77	20.3
24	15 21.8	15 27.8	56 16.2	1.77	56 38.3	1.90	17 15.2	1.87	21.3
25	15 34.2	15 40.9	57 1.8	+2.01	57 26.5	+2.10	18 2.0	2.04	22.3
26	15 47.9	15 55.1	57 52.3	2.18	58 18.7	2.21	18 53.7	2.27	23.3
27	16 2.3	16 9.5	58 45.3	2.20	59 11.5	2.15	19 51.1	2.52	24.3
28	16 16.4	16 22.9	59 37.0	+2.06	60 0.9	+1.90	20 54.2	2.72	25.3
29	16 28.8	16 34.0	60 22.6	1.69	60 41.5	1.43	22 0.7	2.79	26.3
30	16 38.2	16 41.3	60 57.0	1.12	61 8.4	+0.77	23 7.2	2.71	27.3
31	16 43.2	16 43.8	61 15.4	+0.38	61 17.5	−0.03	δ		28.3
32	16 43.0	16 41.0	61 14.7	−0.43	61 7.1	−0.83	0 10.2	2.53	29.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	4 51 50.65	2.7627	N.27 15 11.7	5.491
1	4 54 36.63	2.7697	27 20 35.2	5.292
2	4 57 23.02	2.7765	27 25 46.7	5.090
3	5 0 9.81	2.7832	27 30 46.0	4.887
4	5 2 57.00	2.7897	27 35 33.1	4.683
5	5 5 44.57	2.7959	27 40 7.9	4.477
6	5 8 32.51	2.8020	27 44 30.3	4.269
7	5 11 20.81	2.8078	27 48 40.2	4.060
8	5 14 9.45	2.8134	27 52 37.5	3.848
9	5 16 58.42	2.8189	27 56 22.0	3.635
10	5 19 47.72	2.8242	27 59 53.7	3.422
11	5 22 37.32	2.8292	28 3 12.6	3.208
12	5 25 27.22	2.8340	28 6 18.7	2.992
13	5 28 17.40	2.8386	28 9 11.7	2.774
14	5 31 7.85	2.8429	28 11 51.6	2.556
15	5 33 58.55	2.8470	28 14 18.4	2.337
16	5 36 49.49	2.8508	28 16 32.0	2.117
17	5 39 40.65	2.8544	28 18 32.4	1.895
18	5 42 32.02	2.8578	28 20 19.4	1.672
19	5 45 23.59	2.8610	28 21 53.0	1.449
20	5 48 15.34	2.8638	28 23 13.3	1.226
21	5 51 7.25	2.8664	28 24 20.1	1.001
22	5 53 59.31	2.8688	28 25 13.4	0.776
23	5 56 51.51	2.8710	N.28 25 53.2	0.550

MONDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	5 59 43.83	2.8728	N.28 26 19.4	0.323
1	6 2 36.25	2.8744	28 26 32.0	+ 0.097
2	6 5 28.76	2.8758	28 26 31.0	− 0.130
3	6 8 21.35	2.8770	28 26 16.4	0.357
4	6 11 14.00	2.8778	28 25 48.1	0.585
5	6 14 6.68	2.8783	28 25 6.2	0.813
6	6 16 59.39	2.8786	28 24 10.6	1.041
7	6 19 52.11	2.8786	28 23 1.3	1.268
8	6 22 44.82	2.8784	28 21 38.4	1.496
9	6 25 37.52	2.8780	28 20 1.8	1.723
10	6 28 30.18	2.8772	28 18 11.6	1.950
11	6 31 22.78	2.8762	28 16 7.8	2.177
12	6 34 15.32	2.8750	28 13 50.3	2.404
13	6 37 7.78	2.8734	28 11 19.3	2.630
14	6 40 0.13	2.8716	28 8 34.7	2.857
15	6 42 52.37	2.8696	28 5 36.5	3.082
16	6 45 44.48	2.8673	28 2 24.8	3.307
17	6 48 36.45	2.8648	27 58 59.7	3.531
18	6 51 28.26	2.8620	27 55 21.1	3.754
19	6 54 19.89	2.8590	27 51 29.2	3.977
20	6 57 11.34	2.8558	27 47 23.9	4.198
21	7 0 2.59	2.8523	27 43 5.4	4.418
22	7 2 53.62	2.8486	27 38 33.7	4.637
23	7 5 44.42	2.8446	27 33 48.9	4.856
24	7 8 34.97	2.8404	N.27 28 51.0	5.074

TUESDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 8 34.97	2.8404	N.27 28 51.0	5.074
1	7 11 25.27	2.8360	27 23 40.1	5.289
2	7 14 15.29	2.8313	27 18 16.3	5.504
3	7 17 5.03	2.8265	27 12 39.6	5.718
4	7 19 54.47	2.8215	27 6 50.1	5.931
5	7 22 43.61	2.8163	27 0 47.9	6.141
6	7 25 32.43	2.8109	26 54 33.2	6.349
7	7 28 20.92	2.8052	26 48 6.0	6.557
8	7 31 9.06	2.7993	26 41 26.3	6.764
9	7 33 56.84	2.7933	26 34 34.3	6.968
10	7 36 44.25	2.7871	26 27 30.1	7.171
11	7 39 31.29	2.7807	26 20 13.8	7.372
12	7 42 17.94	2.7742	26 12 45.4	7.572
13	7 45 4.19	2.7674	26 5 5.1	7.769
14	7 47 50.03	2.7606	25 57 13.1	7.964
15	7 50 35.46	2.7536	25 49 9.4	8.158
16	7 53 20.46	2.7464	25 40 54.1	8.350
17	7 56 5.03	2.7392	25 32 27.4	8.539
18	7 58 49.16	2.7318	25 23 49.4	8.727
19	8 1 32.84	2.7242	25 15 0.1	8.913
20	8 4 16.06	2.7164	25 5 59.8	9.097
21	8 6 58.81	2.7086	24 56 48.5	9.278
22	8 9 41.09	2.7007	24 47 26.4	9.457
23	8 12 22.90	2.6927	N.24 37 53.6	9.635

WEDNESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 15 4.22	2.6846	N.24 28 10.2	9.810
1	8 17 45.05	2.6763	24 18 16.4	9.982
2	8 20 25.38	2.6680	24 8 12.3	10.153
3	8 23 5.21	2.6596	23 57 58.0	10.322
4	8 25 44.54	2.6511	23 47 33.7	10.488
5	8 28 23.35	2.6425	23 36 59.5	10.651
6	8 31 1.64	2.6338	23 26 15.6	10.812
7	8 33 39.41	2.6252	23 15 22.1	10.971
8	8 36 16.66	2.6165	23 4 19.1	11.128
9	8 38 53.39	2.6077	22 53 6.8	11.282
10	8 41 29.59	2.5988	22 41 45.3	11.433
11	8 44 5.25	2.5899	22 30 14.8	11.583
12	8 46 40.38	2.5810	22 18 35.4	11.730
13	8 49 14.97	2.5720	22 6 47.2	11.874
14	8 51 49.02	2.5631	21 54 50.5	12.016
15	8 54 22.54	2.5541	21 42 45.3	12.156
16	8 56 55.51	2.5450	21 30 31.8	12.293
17	8 59 27.94	2.5359	21 18 10.2	12.427
18	9 1 59.82	2.5268	21 5 40.5	12.560
19	9 4 31.16	2.5178	20 53 3.0	12.689
20	9 7 1.96	2.5087	20 40 17.8	12.817
21	9 9 32.21	2.4997	20 27 24.9	12.943
22	9 12 1.92	2.4907	20 14 24.6	13.065
23	9 14 31.09	2.4817	20 1 17.1	13.185
24	9 16 59.72	2.4726	N.19 48 2.4	13.303

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 16 59.72	2.4728	N.19 48 2.4	13.303
1	9 19 27.80	2.4636	19 34 40.7	13.418
2	9 21 55.35	2.4547	19 21 12.2	13.531
3	9 24 22.36	2.4457	19 7 37.0	13.642
4	9 26 48.84	2.4368	18 53 55.2	13.750
5	9 29 14.78	2.4278	18 40 7.0	13.855
6	9 31 40.18	2.4189	18 26 12.6	13.958
7	9 34 5.05	2.4102	18 12 12.0	14.059
8	9 36 29.40	2.4014	17 58 5.5	14.158
9	9 38 53.22	2.3927	17 43 53.1	14.254
10	9 41 16.52	2.3640	17 29 35.0	14.347
11	9 43 39.30	2.3754	17 15 11.4	14.439
12	9 46 1.57	2.3668	17 0 42.3	14.529
13	9 48 23.32	2.3583	16 46 7.9	14.616
14	9 50 44.57	2.3499	16 31 28.4	14.700
15	9 53 5.31	2.3415	16 16 43.9	14.782
16	9 55 25.55	2.3331	16 1 54.5	14.862
17	9 57 45.29	2.3248	15 47 0.4	14.941
18	10 0 4.53	2.3167	15 32 1.6	15.017
19	10 2 23.29	2.3086	15 16 58.4	15.090
20	10 4 41.56	2.3005	15 1 50.8	15.162
21	10 6 59.35	2.2925	14 46 39.0	15.231
22	10 9 16.66	2.2846	14 31 23.1	15.298
23	10 11 33.50	2.2768	N.14 16 3.3	15.362

FRIDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 13 49.88	2.2692	N.14 0 39.7	15.424
1	10 16 5.80	2.2615	13 45 12.4	15.485
2	10 18 21.26	2.2539	13 29 41.5	15.544
3	10 20 36.26	2.2463	13 14 7.1	15.601
4	10 22 50.81	2.2389	12 58 29.4	15.655
5	10 25 4.93	2.2316	12 42 48.5	15.707
6	10 27 18.61	2.2244	12 27 4.5	15.758
7	10 29 31.86	2.2173	12 11 17.5	15.807
8	10 31 44.69	2.2102	11 55 27.7	15.853
9	10 33 57.09	2.2032	11 39 35.1	15.898
10	10 36 9.08	2.1964	11 23 39.9	15.941
11	10 38 20.66	2.1896	11 7 42.2	15.981
12	10 40 31.83	2.1828	10 51 42.2	16.019
13	10 42 42.60	2.1763	10 35 39.9	16.057
14	10 44 52.99	2.1699	10 19 35.4	16.093
15	10 47 2.99	2.1635	10 3 28.8	16.126
16	10 49 12.61	2.1572	9 47 20.3	16.157
17	10 51 21.85	2.1509	9 31 9.9	16.187
18	10 53 30.72	2.1448	9 14 57.8	16.215
19	10 55 39.23	2.1388	8 58 44.1	16.242
20	10 57 47.38	2.1329	8 42 28.8	16.267
21	10 59 55.18	2.1271	8 26 12.1	16.289
22	11 2 2.63	2.1214	8 9 54.1	16.310
23	11 4 9.75	2.1158	7 53 34.9	16.330
24	11 6 16.53	2 1102	N. 7 37 14.5	16.348

SATURDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 6 16.53	2.1102	N. 7 37 14.5	16.348
1	11 8 22.98	2.1048	7 20 53.1	16.364
2	11 10 29.11	2.0996	7 4 30.8	16.378
3	11 12 34.93	2.0944	6 48 7.7	16.392
4	11 14 40.44	2.0893	6 31 43.8	16.403
5	11 16 45.65	2.0842	6 15 19.3	16.413
6	11 18 50.55	2.0793	5 58 54.2	16.422
7	11 20 55.16	2.0745	5 42 28.7	16.428
8	11 22 59.49	2.0698	5 26 2.8	16.434
9	11 25 3.54	2.0652	5 9 36.6	16.437
10	11 27 7.31	2.0607	4 53 10.3	16.439
11	11 29 10.82	2.0563	4 36 43.9	16.441
12	11 31 14.07	2.0520	4 20 17.4	16.441
13	11 33 17.06	2.0478	4 3 51.0	16.438
14	11 35 19.81	2.0437	3 47 24.8	16.435
15	11 37 22.31	2.0397	3 30 58.8	16.431
16	11 39 24.57	2.0358	3 14 33.1	16.425
17	11 41 26.61	2.0321	2 58 7.8	16.417
18	11 43 28.42	2.0284	2 41 43.0	16.408
19	11 45 30.01	2.0247	2 25 18.8	16.398
20	11 47 31.38	2.0212	2 8 55.2	16.387
21	11 49 32.55	2.0178	1 52 32.3	16.376
22	11 51 33.52	2.0145	1 36 10.1	16.362
23	11 53 34.29	2.0113	N. 1 19 48.9	16.345

SUNDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 55 34.87	2.0082	N. 1 3 28.7	16.328
1	11 57 35.27	2.0052	0 47 9.5	16.311
2	11 59 35.49	2.0022	0 30 51.3	16.293
3	12 1 35.54	1.9994	N. 0 14 34.3	16.273
4	12 3 35.42	1.9967	S. 0 1 41.4	16.252
5	12 5 35.14	1.9941	0 17 55.9	16.230
6	12 7 34.71	1.9916	0 34 9.0	16.206
7	12 9 34.13	1.9891	0 50 20.6	16.181
8	12 11 33.40	1.9868	1 6 30.7	16.156
9	12 13 32.54	1.9846	1 22 39.3	16.129
10	12 15 31.55	1.9824	1 38 46.2	16.101
11	12 17 30.43	1.9803	1 54 51.4	16.071
12	12 19 29.19	1.9783	2 10 54.7	16.040
13	12 21 27.83	1.9764	2 26 56.2	16.009
14	12 23 26.36	1.9747	2 42 55.8	15.977
15	12 25 24.80	1.9731	2 58 53.4	15.943
16	12 27 23.14	1.9715	3 14 48.9	15.908
17	12 29 21.38	1.9699	3 30 42.4	15.873
18	12 31 19.53	1.9685	3 46 33.7	15.836
19	12 33 17.60	1.9672	4 2 22.7	15.798
20	12 35 15.60	1.9660	4 18 9.5	15.760
21	12 37 13.52	1.9648	4 33 53.9	15.720
22	12 39 11.37	1.9638	4 49 35.9	15.679
23	12 41 9.17	1.9628	5 5 15.4	15.637
24	12 43 6.91	1.9619	S. 5 20 52.4	15.595

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 43 6.91	1.9619	S. 5 20 52.4	15.595
1	12 45 4.60	1.9612	5 36 26.8	15.551
2	12 47 2.25	1.9604	5 51 58.5	15.506
3	12 48 59.85	1.9597	6 7 27.5	15.461
4	12 50 57.42	1.9592	6 22 53.8	15.414
5	12 52 54.96	1.9587	6 38 17.2	15.366
6	12 54 52.47	1.9583	6 53 37.7	15.317
7	12 56 49.96	1.9581	7 8 55.3	15.268
8	12 58 47.44	1.9579	7 24 9.9	15.218
9	13 0 44.91	1.9578	7 39 21.4	15.166
10	13 2 42.37	1.9578	7 54 29.8	15.113
11	13 4 39.84	1.9578	8 9 35.0	15.061
12	13 6 37.31	1.9579	8 24 37.1	15.007
13	13 8 34.79	1.9581	8 39 35.9	14.952
14	13 10 32.28	1.9583	8 54 31.3	14.896
15	13 12 29.79	1.9587	9 9 23.4	14.839
16	13 14 27.32	1.9591	9 24 12.0	14.782
17	13 16 24.88	1.9596	9 38 57.2	14.723
18	13 18 22.48	1.9602	9 53 38.8	14.663
19	13 20 20.11	1.9608	10 8 16.8	14.603
20	13 22 17.78	1.9616	10 22 51.2	14.542
21	13 24 15.50	1.9624	10 37 21.9	14.480
22	13 26 13.27	1.9632	10 51 48.8	14.417
23	13 28 11.09	1.9641	S. 11 6 12.0	14.354

TUESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 30 8.96	1.9651	S. 11 20 31.3	14.289
1	13 32 6.90	1.9662	11 34 46.7	14.223
2	13 34 4.91	1.9674	11 48 58.1	14.157
3	13 36 2.99	1.9686	12 3 5.5	14.090
4	13 38 1.14	1.9699	12 17 8.9	14.022
5	13 39 59.38	1.9713	12 31 8.2	13.953
6	13 41 57.70	1.9727	12 45 3.3	13.883
7	13 43 56.10	1.9742	12 58 54.2	13.813
8	13 45 54.60	1.9757	13 12 40.9	13.742
9	13 47 53.19	1.9773	13 26 23.3	13.670
10	13 49 51.88	1.9790	13 40 1.3	13.597
11	13 51 50.67	1.9808	13 53 34.9	13.523
12	13 53 49.57	1.9826	14 7 4.1	13.449
13	13 55 48.58	1.9844	14 20 28.8	13.373
14	13 57 47.70	1.9863	14 33 48.9	13.297
15	13 59 46.94	1.9883	14 57 4.4	13.220
16	14 1 46.30	1.9903	15 0 15.3	13.142
17	14 3 45.78	1.9923	15 13 21.5	13.063
18	14 5 45.38	1.9944	15 26 22.9	12.983
19	14 7 45.11	1.9967	15 39 19.5	12.903
20	14 9 44.98	1.9990	15 52 11.3	12.822
21	14 11 44.99	2.0013	16 4 58.2	12.741
22	14 13 45.14	2.0037	16 17 40.2	12.658
23	14 15 45.43	2.0060	16 30 17.1	12.574
24	14 17 45.86	2.0084	S. 16 42 49.0	12.490

WEDNESDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 17 45.86	2.0084	S. 16 42 49.0	12.490
1	14 19 46.44	2.0110	16 55 15.9	12.405
2	14 21 47.18	2.0136	17 7 37.6	12.319
3	14 23 48.07	2.0161	17 19 54.1	12.232
4	14 25 49.11	2.0187	17 32 5.4	12.144
5	14 27 50.31	2.0214	17 44 11.4	12.056
6	14 29 51.68	2.0242	17 56 12.1	11.967
7	14 31 53.21	2.0269	18 8 7.4	11.877
8	14 33 54.91	2.0296	18 19 57.3	11.787
9	14 35 56.77	2.0324	18 31 41.8	11.695
10	14 37 58.80	2.0353	18 43 20.7	11.602
11	14 40 1.01	2.0383	18 54 54.0	11.509
12	14 42 3.40	2.0412	19 6 21.8	11.416
13	14 44 5.95	2.0442	19 17 43.9	11.321
14	14 46 8.70	2.0472	19 29 0.3	11.225
15	14 48 11.62	2.0502	19 40 10.9	11.129
16	14 50 14.72	2.0533	19 51 15.8	11.032
17	14 52 18.01	2.0564	20 2 14.8	10.934
18	14 54 21.49	2.0596	20 13 7.9	10.836
19	14 56 25.16	2.0627	20 23 55.1	10.737
20	14 58 29.01	2.0658	20 34 36.3	10.636
21	15 0 33.05	2.0689	20 45 11.4	10.535
22	15 2 37.28	2.0722	20 55 40.5	10.434
23	15 4 41.71	2.0754	S. 21 6 3.5	10.332

THURSDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 6 46.33	2.0786	S. 21 16 20.3	10.228
1	15 8 51.14	2.0819	21 26 30.9	10.124
2	15 10 56.15	2.0852	21 36 35.2	10.019
3	15 13 1.36	2.0885	21 46 33.2	9.914
4	15 15 6.77	2.0917	21 56 24.9	9.808
5	15 17 12.37	2.0950	22 6 10.2	9.702
6	15 19 18.17	2.0983	22 15 49.1	9.594
7	15 21 24.17	2.1017	22 25 21.5	9.485
8	15 23 30.37	2.1050	22 34 47.3	9.376
9	15 25 36.77	2.1083	22 44 6.6	9.267
10	15 27 43.37	2.1117	22 53 19.3	9.156
11	15 29 50.17	2.1150	23 2 25.3	9.044
12	15 31 57.17	2.1183	23 11 24.6	8.932
13	15 34 4.37	2.1216	23 20 17.1	8.819
14	15 36 11.76	2.1249	23 29 2.9	8.707
15	15 38 19.36	2.1283	23 37 41.9	8.593
16	15 40 27.16	2.1316	23 46 14.0	8.477
17	15 42 35.15	2.1349	23 54 39.1	8.361
18	15 44 43.34	2.1382	24 2 57.3	8.245
19	15 46 51.73	2.1414	24 11 8.5	8.128
20	15 49 0.31	2.1447	24 19 12.6	8.010
21	15 51 9.09	2.1479	24 27 9.7	7.892
22	15 53 18.06	2.1511	24 34 59.7	7.773
23	15 55 27.22	2.1543	24 42 42.5	7.652
24	15 57 36.58	2.1576	S. 24 50 18.0	7.532

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 57 36.58	2.1576	S.24 50 18.0	7.532
1	15 59 46.13	2.1607	24 57 46.3	7.411
2	16 1 55.86	2.1638	25 5 7.3	7.290
3	16 4 5.78	2.1669	25 12 21.1	7.168
4	16 6 15.89	2.1700	25 19 27.5	7.045
5	16 8 26.18	2.1730	25 26 26.5	6.922
6	16 10 36.65	2.1760	25 33 18.1	6.797
7	16 12 47.30	2.1790	25 40 2.2	6.672
8	16 14 58.13	2.1819	25 46 38.8	6.547
9	16 17 9.13	2.1848	25 53 7.9	6.422
10	16 19 20.31	2.1876	25 59 29.4	6.295
11	16 21 31.65	2.1904	26 5 43.3	6.168
12	16 23 43.16	2.1932	26 11 49.6	6.041
13	16 25 54.84	2.1960	26 17 48.2	5.912
14	16 28 6.68	2.1987	26 23 39.1	5.783
15	16 30 18.68	2.2013	26 29 22.2	5.654
16	16 32 30.84	2.2039	26 34 57.6	5.525
17	16 34 43.15	2.2064	26 40 25.2	5.394
18	16 36 55.61	2.2089	26 45 44.9	5.263
19	16 39 8.22	2.2113	26 50 56.8	5.133
20	16 41 20.97	2.2137	26 56 0.8	5.001
21	16 43 33.87	2.2161	27 0 56.9	4.868
22	16 45 46.90	2.2183	27 5 45.0	4.736
23	16 48 0.06	2.2205	S.27 10 25.2	4.603

SATURDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 50 13.36	2.2227	S.27 14 57.4	4.470
1	16 52 26.79	2.2247	27 19 21.6	4.336
2	16 54 40.33	2.2267	27 23 37.7	4.201
3	16 56 53.99	2.2287	27 27 45.7	4.067
4	16 59 7.77	2.2306	27 31 45.7	3.932
5	17 1 21.66	2.2324	27 35 37.5	3.796
6	17 3 35.66	2.2342	27 39 21.2	3.660
7	17 5 49.76	2.2358	27 42 56.7	3.524
8	17 8 3.96	2.2374	27 46 24.1	3.388
9	17 10 18.25	2.2389	27 49 43.3	3.251
10	17 12 32.63	2.2403	27 52 54.2	3.113
11	17 14 47.09	2.2417	27 55 56.9	2.976
12	17 17 1.64	2.2431	27 58 51.4	2.839
13	17 19 16.27	2.2443	28 1 37.6	2.701
14	17 21 30.96	2.2454	28 4 15.5	2.563
15	17 23 45.72	2.2465	28 6 45.1	2.425
16	17 26 0.54	2.2475	28 9 6.5	2.287
17	17 28 15.42	2.2484	28 11 19.5	2.148
18	17 30 30.35	2.2492	28 13 24.2	2.009
19	17 32 45.33	2.2500	28 15 20.6	1.870
20	17 35 0.35	2.2507	28 17 8.6	1.731
21	17 37 15.41	2.2512	28 18 48.3	1.592
22	17 39 30.50	2.2517	28 20 19.6	1.452
23	17 41 45.62	2.2522	28 21 42.6	1.313
24	17 44 0.76	2.2525	S.28 22 57.2	1.173

SUNDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 44 0.76	2.2525	S.28 22 57.2	1.173
1	17 46 15.92	2.2527	28 24 3.4	1.033
2	17 48 31.09	2.2529	28 25 1.2	0.894
3	17 50 46.27	2.2530	28 25 50.7	0.755
4	17 53 1.45	2.2530	28 26 31.8	0.615
5	17 55 16.63	2.2529	28 27 4.5	0.476
6	17 57 31.80	2.2527	28 27 28.9	0.337
7	17 59 46.96	2.2524	28 27 44.9	0.197
8	18 2 2.09	2.2520	28 27 52.5	− 0.057
9	18 4 17.20	2.2516	28 27 51.7	+ 0.082
10	18 6 32.28	2.2511	28 27 42.6	0.222
11	18 8 47.33	2.2505	28 27 25.1	0.362
12	18 11 2.34	2.2497	28 26 59.2	0.501
13	18 13 17.30	2.2489	28 26 25.0	0.639
14	18 15 32.21	2.2481	28 25 42.5	0.778
15	18 17 47.07	2.2472	28 24 51.6	0.917
16	18 20 1.87	2.2461	28 23 52.4	1.055
17	18 22 16.60	2.2449	28 22 45.0	1.193
18	18 24 31.26	2.2437	28 21 29.3	1.331
19	18 26 45.85	2.2424	28 20 5.3	1.469
20	18 29 0.35	2.2410	28 18 33.0	1.606
21	18 31 14.77	2.2396	28 16 52.5	1.743
22	18 33 29.10	2.2380	28 15 3.8	1.881
23	18 35 43.33	2.2363	S.28 13 6.8	2.018

MONDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 37 57.46	2.2346	S.28 11 1.6	2.155
1	18 40 11.49	2.2328	28 8 48.2	2.291
2	18 42 25.40	2.2309	28 6 26.7	2.426
3	18 44 39.20	2.2290	28 3 57.1	2.561
4	18 46 52.88	2.2269	28 1 19.4	2.696
5	18 49 6.43	2.2248	27 58 33.6	2.831
6	18 51 19.86	2.2227	27 55 39.7	2.965
7	18 53 33.15	2.2204	27 52 37.8	3.098
8	18 55 46.30	2.2181	27 49 27.9	3.232
9	18 57 59.32	2.2157	27 46 10.0	3.365
10	19 0 12.19	2.2132	27 42 44.1	3.497
11	19 2 24.90	2.2106	27 39 10.3	3.629
12	19 4 37.46	2.2080	27 35 28.6	3.761
13	19 6 49.86	2.2053	27 31 39.0	3.892
14	19 9 2.10	2.2026	27 27 41.6	4.022
15	19 11 14.17	2.1997	27 23 36.4	4.152
16	19 13 26.07	2.1968	27 19 23.4	4.281
17	19 15 37.79	2.1939	27 15 2.7	4.410
18	19 17 49.34	2.1910	27 10 34.2	4.538
19	19 20 0.71	2.1879	27 5 58.1	4.665
20	19 22 11.89	2.1848	27 1 14.4	4.793
21	19 24 22.88	2.1816	26 56 23.0	4.920
22	19 26 33.68	2.1783	26 51 24.0	5.046
23	19 28 44.28	2.1750	26 46 17.5	5.170
24	19 30 54.68	2.1717	S.26 41 3.6	5.294

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 17.					**THURSDAY 19.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	19 30 54.68	2.1717	S.26 41 3.6	5.294	0	21 10 40.85	1.9803	S.20 17 22.4	10.383
1	19 33 4.88	2.1683	26 35 42.2	5.418	1	21 12 39.55	1.9764	20 6 56.8	10.469
2	19 35 14.87	2.1648	26 30 13.4	5.542	2	21 14 38.02	1.9725	19 56 26.1	10.553
3	19 37 24.66	2.1614	26 24 37.1	5.666	3	21 16 36.25	1.9685	19 45 50.4	10.637
4	19 39 34.24	2.1578	26 18 53.5	5.787	4	21 18 34.24	1.9646	19 35 9.7	10.720
5	19 41 43.60	2.1542	26 13 2.7	5.908	5	21 20 32.00	1.9607	19 24 24.0	10.803
6	19 43 52.75	2.1506	26 7 4.6	6.028	6	21 22 29.53	1.9568	19 13 33.3	10.885
7	19 46 1.68	2.1469	26 0 59.3	6.148	7	21 24 26.82	1.9530	19 2 37.8	10.965
8	19 48 10.38	2.1432	25 54 46.8	6.267	8	21 26 23.89	1.9492	18 51 37.5	11.044
9	19 50 18.86	2.1394	25 48 27.2	6.386	9	21 28 20.73	1.9454	18 40 32.5	11.123
10	19 52 27.11	2.1357	25 42 0.5	6.503	10	21 30 17.34	1.9417	18 29 22.8	11.201
11	19 54 35.14	2.1319	25 35 26.8	6.620	11	21 32 13.73	1.9380	18 18 8.4	11.279
12	19 56 42.94	2.1281	25 28 46.1	6.736	12	21 34 9.90	1.9343	18 6 49.3	11.356
13	19 58 50.51	2.1242	25 21 58.5	6.852	13	21 36 5.85	1.9307	17 55 25.7	11.431
14	20 0 57.84	2.1202	25 15 3.9	6.968	14	21 38 1.58	1.9271	17 43 57.6	11.505
15	20 3 4.93	2.1162	25 8 2.4	7.082	15	21 39 57.10	1.9235	17 32 25.1	11.578
16	20 5 11.78	2.1122	25 0 54.1	7.194	16	21 41 52.40	1.9199	17 20 48.2	11.651
17	20 7 18.40	2.1083	24 53 39.1	7.306	17	21 43 47.49	1.9165	17 9 6.9	11.723
18	20 9 24.78	2.1043	24 46 17.4	7.417	18	21 45 42.38	1.9131	16 57 21.4	11.794
19	20 11 30.92	2.1003	24 38 49.0	7.528	19	21 47 37.06	1.9097	16 45 31.6	11.865
20	20 13 36.81	2.0962	24 31 14.0	7.639	20	21 49 31.54	1.9063	16 33 37.6	11.935
21	20 15 42.46	2.0921	24 23 32.3	7.749	21	21 51 25.82	1.9030	16 21 39.4	12.004
22	20 17 47.86	2.0880	24 15 44.1	7.857	22	21 53 19.90	1.8997	16 9 37.1	12.072
23	20 19 53.02	2.0839	S.24 7 49.5	7.964	23	21 55 13.78	1.8964	S.15 57 30.8	12.138
	WEDNESDAY 18.					**FRIDAY 20.**			
0	20 21 57.93	2.0797	S.23 59 48.4	8.072	0	21 57 7.47	1.8933	S.15 45 20.6	12.204
1	20 24 2.59	2.0756	23 51 40.9	8.178	1	21 59 0.97	1.8902	15 33 6.4	12.270
2	20 26 7.00	2.0715	23 43 27.1	8.282	2	22 0 54.29	1.8871	15 20 48.2	12.335
3	20 28 11.17	2.0673	23 35 7.1	8.386	3	22 2 47.42	1.8840	15 8 26.2	12.399
4	20 30 15.08	2.0631	23 26 40.8	8.490	4	22 4 40.37	1.8811	14 56 0.4	12.462
5	20 32 18.74	2.0589	23 18 8.3	8.593	5	22 6 33.15	1.8782	14 43 30.8	12.523
6	20 34 22.15	2.0548	23 9 29.6	8.696	6	22 8 25.75	1.8753	14 30 57.6	12.584
7	20 36 25.31	2.0506	23 0 44.8	8.797	7	22 10 18.18	1.8724	14 18 20.7	12.645
8	20 38 28.22	2.0463	22 51 54.0	8.896	8	22 12 10.44	1.8696	14 5 40.2	12.704
9	20 40 30.87	2.0421	22 42 57.3	8.995	9	22 14 2.53	1.8668	13 52 56.2	12.763
10	20 42 33.27	2.0380	22 33 54.6	9.094	10	22 15 54.46	1.8642	13 40 8.7	12.821
11	20 44 35.43	2.0339	22 24 46.0	9.192	11	22 17 46.23	1.8616	13 27 17.7	12.879
12	20 46 37.34	2.0297	22 15 31.6	9.288	12	22 19 37.85	1.8590	13 14 23.2	12.936
13	20 48 39.00	2.0255	22 6 11.4	9.384	13	22 21 29.31	1.8565	13 1 25.4	12.991
14	20 50 40.40	2.0213	21 56 45.5	9.479	14	22 23 20.63	1.8541	12 48 24.3	13.046
15	20 52 41.55	2.0172	21 47 13.9	9.573	15	22 25 11.80	1.8517	12 35 19.9	13.100
16	20 54 42.46	2.0131	21 37 36.7	9.667	16	22 27 2.83	1.8493	12 22 12.3	13.153
17	20 56 43.12	2.0089	21 27 53.9	9.760	17	22 28 53.72	1.8471	12 9 1.6	13.205
18	20 58 43.53	2.0048	21 18 5.5	9.852	18	22 30 44.48	1.8448	11 55 47.7	13.257
19	21 0 43.70	2.0007	21 8 11.7	9.942	19	22 32 35.10	1.8427	11 42 30.7	13.308
20	21 2 43.62	1.9966	20 58 12.5	10.032	20	22 34 25.60	1.8406	11 29 10.7	13.358
21	21 4 43.29	1.9925	20 48 7.9	10.121	21	22 36 15.97	1.8385	11 15 47.8	13.407
22	21 6 42.72	1.9885	20 37 58.0	10.209	22	22 38 6.22	1.8366	11 2 21.9	13.456
23	21 8 41.91	1.9844	20 27 42.8	10.297	23	22 39 56.36	1.8347	10 48 53.1	13.504
24	21 10 40.85	1.9803	S.20 17 22.4	10.383	24	22 41 46.38	1.8328	S.10 35 21.4	13.552

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 41 46.38	1.8328	S. 10 35 21.4	13.552
1	22 43 36.29	1.8310	10 21 46.9	13.598
2	22 45 26.10	1.8293	10 8 9.7	13.642
3	22 47 15.81	1.8277	9 54 29.9	13.686
4	22 49 5.42	1.8260	9 40 47.4	13.730
5	22 50 54.93	1.8244	9 27 2.3	13.773
6	22 52 44.35	1.8230	9 13 14.6	13.816
7	22 54 33.69	1.8216	8 59 24.4	13.857
8	22 56 22.95	1.8202	8 45 31.7	13.898
9	22 58 12.12	1.8189	8 31 36.6	13.938
10	23 0 1.22	1.8178	8 17 39.1	13.977
11	23 1 50.26	1.8167	8 3 39.3	14.016
12	23 3 39.23	1.8157	7 49 37.2	14.054
13	23 5 28.14	1.8147	7 35 32.8	14.091
14	23 7 16.99	1.8137	7 21 26.3	14.127
15	23 9 5.79	1.8129	7 7 17.6	14.162
16	23 10 54.54	1.8121	6 53 6.8	14.197
17	23 12 43.24	1.8113	6 38 54.0	14.230
18	23 14 31.90	1.8107	6 24 39.2	14.263
19	23 16 20.53	1.8102	6 10 22.4	14.296
20	23 18 9.13	1.8097	5 56 3.7	14.327
21	23 19 57.70	1.8093	5 41 43.1	14.358
22	23 21 46.25	1.8090	5 27 20.7	14.388
23	23 23 34.78	1.8087	S. 5 12 56.5	14.417

SUNDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 25 23.29	1.8085	S. 4 58 30.6	14.446
1	23 27 11.80	1.8084	4 44 3.0	14.474
2	23 29 0.30	1.8083	4 29 33.8	14.501
3	23 30 48.80	1.8083	4 15 2.9	14.527
4	23 32 37.30	1.8084	4 0 30.5	14.552
5	23 34 25.81	1.8087	3 45 56.6	14.577
6	23 36 14.34	1.8089	3 31 21.3	14.600
7	23 38 2.88	1.8092	3 16 44.6	14.623
8	23 39 51.45	1.8097	3 2 6.5	14.646
9	23 41 40.05	1.8102	2 47 27.0	14.668
10	23 43 28.68	1.8108	2 32 46.3	14.688
11	23 45 17.35	1.8114	2 18 4.4	14.708
12	23 47 6.05	1.8121	2 3 21.3	14.727
13	23 48 54.80	1.8130	1 48 37.1	14.746
14	23 50 43.61	1.8139	1 33 51.8	14.763
15	23 52 32.47	1.8149	1 19 5.5	14.780
16	23 54 21.39	1.8159	1 4 18.2	14.797
17	23 56 10.38	1.8170	0 49 29.9	14.812
18	23 57 59.43	1.8182	0 34 40.8	14.825
19	23 59 48.56	1.8195	0 19 50.9	14.839
20	0 1 37.77	1.8209	S. 0 5 0.1	14.852
21	0 3 27.07	1.8224	N. 0 9 51.4	14.864
22	0 5 16.46	1.8239	0 24 43.6	14.876
23	0 7 5.94	1.8255	0 39 36.5	14.886
24	0 8 55.52	1.8272	N. 0 54 29.9	14.895

MONDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 8 55.52	1.8272	N. 0 54 29.9	14.895
1	0 10 45.21	1.8291	1 9 23.9	14.904
2	0 12 35.01	1.8310	1 24 18.4	14.912
3	0 14 24.93	1.8330	1 39 13.3	14.918
4	0 16 14.97	1.8350	1 54 8.6	14.924
5	0 18 5.13	1.8371	2 9 4.2	14.929
6	0 19 55.42	1.8393	2 24 0.1	14.933
7	0 21 45.85	1.8417	2 38 56.2	14.937
8	0 23 36.42	1.8441	2 53 52.6	14.941
9	0 25 27.14	1.8466	3 8 49.1	14.943
10	0 27 18.01	1.8492	3 23 45.7	14.943
11	0 29 9.04	1.8518	3 38 42.3	14.943
12	0 31 0.23	1.8546	3 53 38.8	14.942
13	0 32 51.59	1.8574	4 8 35.3	14.940
14	0 34 43.12	1.8603	4 23 31.6	14.937
15	0 36 34.83	1.8633	4 38 27.7	14.933
16	0 38 26.72	1.8665	4 53 23.6	14.929
17	0 40 18.81	1.8697	5 8 19.2	14.923
18	0 42 11.09	1.8730	5 23 14.4	14.917
19	0 44 3.57	1.8764	5 38 9.2	14.909
20	0 45 56.26	1.8798	5 53 3.5	14.900
21	0 47 49.15	1.8833	6 7 57.2	14.891
22	0 49 42.26	1.8870	6 22 50.4	14.882
23	0 51 35.59	1.8908	N. 6 37 43.0	14.871

TUESDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 53 29.15	1.8947	N. 6 52 34.9	14.858
1	0 55 22.95	1.8986	7 7 26.0	14.844
2	0 57 16.98	1.9025	7 22 16.2	14.829
3	0 59 11.25	1.9066	7 37 5.5	14.813
4	1 1 5.77	1.9108	7 51 53.8	14.797
5	1 3 0.55	1.9152	8 6 41.2	14.781
6	1 4 55.59	1.9196	8 21 27.5	14.762
7	1 6 50.90	1.9241	8 36 12.6	14.742
8	1 8 46.48	1.9286	8 50 56.5	14.722
9	1 10 42.33	1.9332	9 5 39.2	14.700
10	1 12 38.46	1.9380	9 20 20.5	14.677
11	1 14 34.89	1.9429	9 35 0.4	14.652
12	1 16 31.61	1.9478	9 49 38.8	14.627
13	1 18 28.63	1.9529	10 4 15.6	14.601
14	1 20 25.96	1.9580	10 18 50.9	14.574
15	1 22 23.59	1.9632	10 33 24.5	14.545
16	1 24 21.54	1.9686	10 47 56.3	14.515
17	1 26 19.82	1.9740	11 2 26.3	14.484
18	1 28 18.42	1.9794	11 16 54.4	14.452
19	1 30 17.35	1.9851	11 31 20.5	14.418
20	1 32 16.63	1.9908	11 45 44.6	14.384
21	1 34 16.25	1.9966	12 0 6.6	14.348
22	1 36 16.22	2.0024	12 14 26.4	14.311
23	1 38 16.54	2.0083	12 28 43.9	14.272
24	1 40 17.22	2.0144	N. 12 42 59.0	14.232

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 25.					FRIDAY 27.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	1 40 17.22	2.0144	N.12 42 59.0	14.232	0	3 25 33.82	2.3986	N.22 51 59.2	10.494
1	1 42 18.27	2.0207	12 57 11.7	14.191	1	3 27 58.02	2.4079	23 2 25.2	10.372
2	1 44 19.70	2.0269	13 11 21.9	14.149	2	3 30 22.77	2.4172	23 12 43.8	10.247
3	1 46 21.50	2.0332	13 25 29.6	14.106	3	3 32 48.08	2.4265	23 22 54.8	10.120
4	1 48 23.68	2.0396	13 39 34.6	14.060	4	3 35 13.95	2.4358	23 32 58.2	9.992
5	1 50 26.25	2.0462	13 53 36.8	14.013	5	3 37 40.38	2.4452	23 42 53.9	9.862
6	1 52 29.22	2.0528	14 7 36.2	13.966	6	3 40 7.38	2.4546	23 52 41.7	9.730
7	1 54 32.59	2.0595	14 21 32.7	13.917	7	3 42 34.93	2.4639	24 2 21.5	9.595
8	1 56 36.36	2.0662	14 35 26.2	13.866	8	3 45 3.04	2.4732	24 11 53.1	9.458
9	1 58 40.54	2.0731	14 49 16.6	13.813	9	3 47 31.71	2.4825	24 21 16.5	9.320
10	2 0 45.13	2.0801	15 3 3.8	13.760	10	3 50 0.94	2.4917	24 30 31.5	9.179
11	2 2 50.15	2.0872	15 16 47.8	13.705	11	3 52 30.72	2.5009	24 39 38.0	9.036
12	2 4 55.60	2.0944	15 30 28.4	13.648	12	3 55 1.05	2.5102	24 48 35.8	8.891
13	2 7 1.48	2.1016	15 44 5.6	13.591	13	3 57 31.94	2.5194	24 57 24.9	8.744
14	2 9 7.79	2.1088	15 57 39.3	13.532	14	4 0 3.38	2.5285	25 6 5.1	8.595
15	2 11 14.54	2.1162	16 11 9.4	13.470	15	4 2 35.36	2.5376	25 14 36.3	8.444
16	2 13 21.74	2.1237	16 24 35.7	13.408	16	4 5 7.89	2.5467	25 22 58.4	8.291
17	2 15 29.39	2.1312	16 37 58.3	13.344	17	4 7 40.96	2.5557	25 31 11.2	8.136
18	2 17 37.49	2.1389	16 51 17.0	13.278	18	4 10 14.57	2.5647	25 39 14.7	7.979
19	2 19 46.06	2.1467	17 4 31.7	13.211	19	4 12 48.72	2.5736	25 47 8.7	7.819
20	2 21 55.10	2.1545	17 17 42.3	13.142	20	4 15 23.40	2.5823	25 54 53.0	7.657
21	2 24 4.60	2.1623	17 30 48.7	13.071	21	4 17 58.60	2.5911	26 2 27.6	7.494
22	2 26 14.58	2.1703	17 43 50.8	12.999	22	4 20 34.33	2.5998	26 9 52.3	7.329
23	2 28 25.04	2.1783	N.17 56 48.6	12.926	23	4 23 10.58	2.6085	N.26 17 7.1	7.169
THURSDAY 26.					SATURDAY 28.				
0	2 30 35.98	2.1864	N.18 9 41.9	12.850	0	4 25 47.35	2.6171	N.26 24 11.8	6.993
1	2 32 47.41	2.1946	18 22 30.6	12.772	1	4 28 24.63	2.6255	26 31 6.3	6.822
2	2 34 59.34	2.2029	18 35 14.6	12.693	2	4 31 2.41	2.6337	26 37 50.4	6.648
3	2 37 11.76	2.2112	18 47 53.8	12.612	3	4 33 40.68	2.6419	26 44 24.1	6.473
4	2 39 24.68	2.2196	19 0 28.1	12.530	4	4 36 19.44	2.6501	26 50 47.2	6.297
5	2 41 38.11	2.2281	19 12 57.4	12.447	5	4 38 58.69	2.6582	26 56 59.7	6.118
6	2 43 52.05	2.2366	19 25 21.7	12.361	6	4 41 38.42	2.6661	27 3 1.4	5.938
7	2 46 6.50	2.2452	19 37 40.7	12.273	7	4 44 18.62	2.6738	27 8 52.2	5.755
8	2 48 21.47	2.2539	19 49 54.4	12.183	8	4 46 59.28	2.6815	27 14 32.0	5.570
9	2 50 36.96	2.2626	20 2 2.7	12.092	9	4 49 40.40	2.6891	27 20 0.6	5.383
10	2 52 52.98	2.2713	20 14 5.4	11.998	10	4 52 21.97	2.6964	27 25 18.0	5.196
11	2 55 9.52	2.2801	20 26 2.5	11.904	11	4 55 3.97	2.7036	27 30 24.1	5.007
12	2 57 26.59	2.2890	20 37 53.9	11.807	12	4 57 46.40	2.7107	27 35 18.8	4.815
13	2 59 44.20	2.2979	20 49 39.4	11.708	13	5 0 29.26	2.7177	27 40 1.9	4.622
14	3 2 2.34	2.3068	21 1 18.9	11.607	14	5 3 12.53	2.7245	27 44 33.4	4.428
15	3 4 21.02	2.3158	21 12 52.3	11.505	15	5 5 56.20	2.7312	27 48 53.2	4.232
16	3 6 40.24	2.3249	21 24 19.5	11.400	16	5 8 40.27	2.7377	27 53 1.2	4.034
17	3 9 0.01	2.3341	21 35 40.3	11.293	17	5 11 24.72	2.7440	27 56 57.3	3.834
18	3 11 20.33	2.3432	21 46 54.7	11.185	18	5 14 9.55	2.7502	28 0 41.3	3.633
19	3 13 41.19	2.3524	21 58 2.5	11.075	19	5 16 54.74	2.7561	28 4 13.2	3.431
20	3 16 2.61	2.3616	22 9 3.7	10.963	20	5 19 40.28	2.7618	28 7 33.0	3.227
21	3 18 24.58	2.3708	22 19 58.1	10.848	21	5 22 26.16	2.7674	28 10 40.5	3.022
22	3 20 47.10	2.3800	22 30 45.5	10.732	22	5 25 12.37	2.7726	28 13 35.7	2.816
23	3 23 10.18	2.3893	22 41 25.9	10.614	23	5 27 58.90	2.7781	28 16 18.4	2.608
24	3 25 33.82	2.3986	N.22 51 59.2	10.494	24	5 30 45.74	2.7831	N.28 18 48.6	2.399

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 30 45.74	2.7831	N.28 18 48.6	2.399
1	5 33 32.87	2.7878	28 21 6.3	2.189
2	5 36 20.28	2.7925	28 23 11.3	1.977
3	5 39 7.97	2.7969	28 25 3.6	1.765
4	5 41 55.91	2.8010	28 26 43.1	1.552
5	5 44 44.09	2.8049	28 28 9.8	1.338
6	5 47 32.50	2.8087	28 29 23.6	1.123
7	5 50 21.13	2.8122	28 30 24.5	0.907
8	5 53 9.96	2.8155	28 31 12.4	0.689
9	5 55 58.99	2.8186	28 31 47.2	0.471
10	5 58 48.19	2.8214	28 32 8.9	0.253
11	6 1 37.55	2.8239	28 32 17.5	+ 0.034
12	6 4 27.06	2.8263	28 32 13.0	− 0.185
13	6 7 16.71	2.8285	28 31 55.3	0.406
14	6 10 6.48	2.8303	28 31 24.3	0.627
15	6 12 56.35	2.8320	28 30 40.1	0.848
16	6 15 46.32	2.8335	28 29 42.6	1.068
17	6 18 36.37	2.8347	28 28 31.9	1.289
18	6 21 26.48	2.8356	28 27 7.9	1.512
19	6 24 16.64	2.8364	28 25 30.5	1.734
20	6 27 6.83	2.8368	28 23 39.8	1.956
21	6 29 57.05	2.8370	28 21 35.8	2.178
22	6 32 47.27	2.8369	28 19 18.5	2.400
23	6 35 37.48	2.8367	N.28 16 47.8	2.622

MONDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 38 27.68	2.8363	N.28 14 3.8	2.844
1	6 41 17.84	2.8355	28 11 6.5	3.066
2	6 44 7.94	2.8345	28 7 55.9	3.287
3	6 46 57.98	2.8333	28 4 32.1	3.508
4	6 49 47.94	2.8318	28 0 55.0	3.728
5	6 52 37.80	2.8302	27 57 4.7	3.948
6	6 55 27.56	2.8283	27 53 1.2	4.167
7	6 58 17.20	2.8262	27 48 44.6	4.386
8	7 1 6.70	2.8238	27 44 14.9	4.604
9	7 3 56.06	2.8213	27 39 32.1	4.822
10	7 6 45.26	2.8185	27 34 36.3	5.038
11	7 9 34.28	2.8155	27 29 27.5	5.254
12	7 12 23.12	2.8123	27 24 5.8	5.469
13	7 15 11.76	2.8088	27 18 31.2	5.683
14	7 18 0.18	2.8052	27 12 43.8	5.896
15	7 20 48.38	2.8013	27 6 43.7	6.107
16	7 23 36.34	2.7972	27 0 31.0	6.318
17	7 26 24.05	2.7930	26 54 5.6	6.528
18	7 29 11.50	2.7886	26 47 27.7	6.736
19	7 31 58.68	2.7840	26 40 37.3	6.942
20	7 34 45.58	2.7792	26 33 34.6	7.147
21	7 37 32.18	2.7742	26 26 19.6	7.352
22	7 40 18.48	2.7690	26 18 52.4	7.555
23	7 43 4.46	2.7637	26 11 13.0	7.757
24	7 45 50.12	2.7582	N.26 3 21.6	7.956

TUESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 45 50.12	2.7582	N.26 3 21.6	7.956
1	7 48 35.44	2.7525	25 55 18.3	8.154
2	7 51 20.42	2.7467	25 47 3.1	8.350
3	7 54 5.05	2.7407	25 38 36.3	8.543
4	7 56 49.31	2.7346	25 29 57.9	8.737
5	7 59 33.20	2.7283	25 21 7.9	8.928
6	8 2 16.71	2.7219	25 12 6.5	9.117
7	8 4 59.83	2.7154	25 2 53.8	9.305
8	8 7 42.56	2.7087	24 53 29.9	9.490
9	8 10 24.88	2.7019	24 43 55.0	9.673
10	8 13 6.79	2.6951	24 34 9.1	9.855
11	8 15 48.29	2.6881	24 24 12.4	10.034
12	8 18 29.36	2.6809	24 14 5.0	10.212
13	8 21 10.00	2.6737	24 3 47.0	10.388
14	8 23 50.20	2.6664	23 53 18.5	10.561
15	8 26 29.97	2.6591	23 42 39.7	10.732
16	8 29 9.29	2.6515	23 31 50.7	10.901
17	8 31 48.15	2.6439	23 20 51.6	11.068
18	8 34 26.56	2.6363	23 9 42.5	11.233
19	8 37 4.51	2.6286	22 58 23.6	11.395
20	8 39 41.99	2.6208	22 46 55.1	11.555
21	8 42 19.01	2.6130	22 35 17.0	11.713
22	8 44 55.55	2.6051	22 23 29.5	11.868
23	8 47 31.62	2.5972	N.22 11 32.8	12.022

WEDNESDAY, AUGUST 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 50 7.21	2.5892	N.21 59 26.9	12.173

PHASES OF THE MOON.

			d	h	m
●	New Moon . .	July	2	17	45.5
☽	First Quarter. . . .		9	10	15.1
○	Full Moon		17	10	2.7
☾	Last Quarter		25	9	7.0

			d	h
☾	Perigee	July	3	1.7
☾	Apogee		17	2.5
☾	Perigee		31	11.1

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	III h.	P. L. of Diff.	VI h.	P. L. of Diff.	IX h.	P. L. of Diff.
4	Sun	W.	18° 35′ 44″	2427	20° 18′ 40″	2413	22° 1′ 56″	2403	23° 45′ 26″	2396
	Saturn	E.	77 54 32	2009	76 1 12	2016	74 8 3	2024	72 15 6	2032
	Spica	E.	82 4 3	1993	80 10 18	2000	78 16 44	2007	76 23 21	2016
5	Sun	W.	32 23 41	2408	34 7 4	2415	35 50 17	2424	37 33 17	2435
	Saturn	E.	62 53 54	2083	61 2 29	2096	59 11 23	2109	57 20 37	2122
	Spica	E.	66 59 55	2065	65 8 2	2077	63 16 27	2089	61 25 11	2101
6	Sun	W.	46 4 12	2499	47 45 27	2513	49 26 22	2529	51 6 55	2545
	Saturn	E.	48 12 8	2197	46 23 36	2214	44 35 29	2231	42 47 47	2247
	Spica	E.	52 13 57	2172	50 24 48	2188	48 36 2	2204	46 47 40	2219
	Antares	E.	98 8 14	2172	96 19 4	2188	94 30 18	2204	92 41 56	2219
7	Sun	W.	59 24 2	2629	61 2 17	2647	62 40 8	2665	64 17 35	2684
	Saturn	E.	33 55 55	2342	32 10 57	2362	30 26 28	2384	28 42 30	2406
	Spica	E.	37 51 53	2304	36 5 59	2320	34 20 29	2337	32 35 24	2355
	Antares	E.	83 46 6	2302	82 0 10	2320	80 14 40	2337	78 29 35	2356
8	Sun	W.	72 18 42	2775	73 53 42	2794	75 28 18	2812	77 2 30	2831
	Regulus	W.	30 12 21	2458	31 54 34	2475	33 36 23	2491	35 17 49	2507
	Antares	E.	69 50 28	2443	68 7 54	2460	66 25 45	2477	64 44 0	2494
9	Sun	W.	84 47 35	2921	86 19 27	2939	87 50 57	2957	89 22 4	2973
	Regulus	W.	43 39 21	2588	45 18 32	2604	46 57 22	2620	48 35 50	2636
	Antares	E.	56 21 14	2580	54 41 51	2596	53 2 50	2612	51 24 12	2628
	α Aquilæ	E.	106 12 57	3461	104 51 49	3465	103 30 46	3469	102 9 47	3475
10	Sun	W.	96 52 24	3056	98 21 27	3072	99 50 11	3087	101 18 36	3103
	Regulus	W.	56 42 58	2710	58 19 24	2725	59 55 31	2739	61 31 19	2753
	Antares	E.	43 16 18	2704	41 39 44	2719	40 3 30	2734	38 27 35	2747
	α Aquilæ	E.	95 26 49	3517	94 6 44	3528	92 46 51	3540	91 27 11	3554
11	Sun	W.	108 36 10	3174	110 2 50	3188	111 29 14	3201	112 55 22	3214
	Regulus	W.	69 25 55	2818	71 0 0	2829	72 33 50	2842	74 7 24	2852
	Saturn	W.	19 41 53	2900	21 14 12	2903	22 46 27	2907	24 18 37	2912
	α Aquilæ	E.	84 52 39	3628	83 34 35	3645	82 16 49	3663	80 59 23	3681
12	Sun	W.	120 2 25	3273	121 27 8	3283	122 51 39	3294	124 15 57	3304
	Regulus	W.	81 51 45	2905	83 23 58	2914	84 55 59	2924	86 27 48	2932
	Saturn	W.	31 57 37	2944	33 29 0	2952	35 0 13	2959	36 31 17	2966
	Spica	W.	27 48 50	2901	29 21 8	2911	30 53 13	2920	32 25 7	2929
	α Aquilæ	E.	74 37 23	3788	73 22 8	3811	72 7 17	3835	70 52 51	3862
	Fomalhaut	E.	100 1 41	3134	98 34 13	3142	97 6 54	3150	95 39 45	3158
13	Regulus	W.	94 4 13	2972	95 35 1	2979	97 5 40	2985	98 36 11	2993
	Saturn	W.	44 4 27	3000	45 34 40	3005	47 4 46	3012	48 34 44	3018
	Spica	W.	40 1 55	2969	41 32 47	2975	43 3 31	2982	44 34 6	2988
	α Aquilæ	E.	64 47 49	4013	63 36 22	4047	62 25 29	4085	61 15 13	4124
	Fomalhaut	E.	88 26 18	3196	87 0 4	3204	85 34 0	3211	84 8 4	3220
14	Saturn	W.	56 2 50	3043	57 32 9	3048	59 1 22	3052	60 30 30	3056
	Spica	W.	52 5 9	3017	53 35 1	3022	55 4 47	3026	56 34 27	3030

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XVh.	P.L. of Diff.	XVIIIh.	P.L. of Diff.	XXIh.	P.L. of Diff
4	SUN	W.	25° 29′ 4″	2395	27° 12′ 46″	2394	28° 56′ 29″	2397	30° 40′ 8″	2401
	SATURN	E.	70 22 22	2041	68 29 51	2051	66 37 36	2061	64 45 37	2072
	Spica	E.	74 30 11	2024	72 37 14	2033	70 44 32	2043	68 52 5	2054
5	SUN	W.	39 16 2	2446	40 58 31	2458	42 40 43	2471	44 22 37	2485
	SATURN	E.	55 30 11	2136	53 40 7	2150	51 50 24	2165	50 1 4	2181
	Spica	E.	59 34 14	2115	57 43 38	2128	55 53 22	2143	54 3 28	2158
6	SUN	W.	52 47 6	2561	54 26 55	2577	56 6 21	2595	57 45 23	2612
	SATURN	E.	41 0 30	2266	39 13 40	2284	37 27 17	2303	35 41 22	2322
	Spica	E.	44 59 41	2236	43 12 7	2252	41 24 57	2270	39 38 13	2286
	Antares	E.	90 53 57	2235	89 6 22	2252	87 19 12	2269	85 32 27	2285
7	SUN	W.	65 54 37	2701	67 31 15	2720	69 7 28	2738	70 43 17	2756
	SATURN	E.	26 59 4	2429	25 16 11	2453	23 33 52	2479	21 52 9	2506
	Spica	E.	30 50 45	2373	29 6 31	2391	27 22 43	2408	25 39 20	2426
	Antares	E.	76 44 55	2372	75 0 40	2390	73 16 51	2408	71 33 27	2425
8	SUN	W.	78 36 18	2849	80 9 42	2868	81 42 42	2885	83 15 20	2903
	Regulus	W.	36 58 53	2523	38 39 34	2540	40 19 52	2556	41 59 48	2572
	Antares	E.	63 2 39	2512	61 21 42	2529	59 41 9	2546	58 1 0	2563
9	SUN	W.	90 52 50	2991	92 23 14	3007	93 53 18	3024	95 23 1	3040
	Regulus	W.	50 13 56	2651	51 51 42	2666	53 29 7	2681	55 6 12	2695
	Antares	E.	49 45 55	2644	48 8 0	2659	46 30 25	2675	44 53 11	2690
	α Aquilæ	E.	100 48 55	3481	99 28 10	3488	98 7 33	3497	96 47 6	3506
10	SUN	W.	102 46 42	3118	104 14 30	3132	105 42 1	3147	107 9 14	3161
	Regulus	W.	63 6 49	2766	64 42 1	2779	66 16 56	2792	67 51 34	2805
	Antares	E.	36 51 58	2761	35 16 39	2775	33 41 38	2788	32 6 54	2800
	α Aquilæ	E.	90 7 46	3566	88 48 35	3581	87 29 40	3596	86 11 1	3611
11	SUN	W.	114 21 15	3225	115 46 54	3238	117 12 18	3250	118 37 28	3261
	Regulus	W.	75 40 44	2864	77 13 49	2874	78 46 41	2885	80 19 19	2894
	SATURN	W.	25 50 41	2918	27 22 37	2924	28 54 26	2931	30 26 6	2938
	α Aquilæ	E.	79 42 16	3701	78 25 30	3721	77 9 5	3742	75 53 2	3765
12	SUN	W.	125 40 4	3314	127 3 59	3325	128 27 42	3334	129 51 14	3343
	Regulus	W.	87 59 26	2941	89 30 53	2949	91 2 10	2958	92 33 16	2965
	SATURN	W.	38 2 12	2973	39 32 58	2980	41 3 36	2986	42 34 6	2993
	Spica	W.	33 56 49	2937	35 28 21	2946	36 59 42	2954	38 30 53	2961
	α Aquilæ	E.	69 38 53	3890	68 25 23	3918	67 12 21	3947	65 59 49	3979
	Fomalhaut	E.	94 12 45	3165	92 45 54	3173	91 19 13	3181	89 52 41	3188
13	Regulus	W.	100 6 33	2998	101 36 48	3005	103 6 55	3010	104 36 55	3016
	SATURN	W.	50 4 34	3023	51 34 18	3029	53 3 55	3034	54 33 26	3039
	Spica	W.	46 4 34	2994	47 34 54	3001	49 5 6	3006	50 35 11	3012
	α Aquilæ	E.	60 5 34	4165	58 56 35	4209	57 48 17	4255	56 40 43	4306
	Fomalhaut	E.	82 42 18	3227	81 16 41	3235	79 51 13	3243	78 25 55	3251
14	SATURN	W.	61 59 33	3060	63 28 31	3064	64 57 25	3068	66 26 14	3070
	Spica	W.	58 4 2	3034	59 33 32	3039	61 2 57	3042	62 32 18	3045

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P.L. of Diff.	IIIh.	P.L. of Diff.	VIh.	P.L. of Diff.	IXh.	P.L. of Diff.
14	α Aquilæ	E.	55° 33′ 56″	4358	54° 27′ 57″	4415	53° 22′ 49″	4475	52° 18′ 35″	4541
	Fomalhaut	E.	77 0 46	3259	75 35 47	3267	74 10 57	3276	72 46 17	3283
	α Pegasi	E.	98 39 37	3304	97 15 30	3306	95 51 26	3309	94 27 25	3313
15	Saturn	W.	67 55 0	3073	69 23 42	3077	70 52 20	3079	72 20 55	3081
	Spica	W.	64 1 35	3048	65 30 48	3052	66 59 57	3054	68 29 3	3056
	Antares	W.	18 7 7	3048	19 36 20	3051	21 5 30	3054	22 34 36	3056
	Fomalhaut	E.	65 45 28	3330	64 21 51	3339	62 58 25	3351	61 35 12	3361
	α Pegasi	E.	87 28 19	3330	86 4 42	3334	84 41 10	3338	83 17 42	3342
	Mars	E.	106 39 14	3271	105 14 29	3275	103 49 48	3277	102 25 10	3279
16	Saturn	W.	79 43 12	3091	81 11 33	3092	82 39 52	3093	84 8 10	3094
	Spica	W.	75 53 52	3066	77 22 43	3067	78 51 33	3068	80 20 22	3069
	Antares	W.	29 59 25	3066	31 28 16	3067	32 57 6	3068	34 25 55	3069
	Fomalhaut	E.	54 42 27	3426	53 20 40	3441	51 59 10	3458	50 37 59	3476
	α Pegasi	E.	76 21 40	3365	74 58 44	3372	73 35 55	3377	72 13 12	3383
	Mars	E.	95 22 35	3288	93 58 10	3289	92 33 46	3291	91 9 24	3291
17	Saturn	W.	91 29 27	3096	92 57 42	3096	94 25 56	3096	95 54 10	3096
	Spica	W.	87 44 11	3071	89 12 56	3071	90 41 41	3070	92 10 27	3070
	Antares	W.	41 49 45	3071	43 18 30	3071	44 47 15	3070	46 16 1	3070
	Fomalhaut	E.	43 57 38	3591	42 38 54	3621	41 20 42	3654	40 3 6	3692
	α Pegasi	E.	65 21 28	3419	63 59 33	3427	62 37 47	3437	61 16 12	3446
	Mars	E.	84 7 42	3294	82 43 23	3293	81 19 3	3293	79 54 43	3292
	α Arietis	E.	106 28 50	3109	105 0 51	3108	103 32 51	3107	102 4 50	3105
18	Spica	W.	99 34 28	3065	101 3 21	3064	102 32 15	3062	104 1 11	3060
	Antares	W.	53 40 3	3065	55 8 56	3063	56 37 51	3062	58 6 47	3060
	α Pegasi	E.	54 31 22	3509	53 11 8	3525	51 51 12	3543	50 31 35	3562
	Mars	E.	72 52 49	3287	71 28 22	3286	70 3 54	3284	68 39 24	3282
	α Arietis	E.	94 44 23	3100	93 16 13	3098	91 48 1	3096	90 19 47	3094
19	Antares	W.	65 32 9	3047	67 1 23	3044	68 30 41	3041	70 0 3	3038
	Mars	E.	61 36 16	3270	60 11 30	3268	58 46 41	3265	57 21 49	3262
	α Arietis	E.	82 57 57	3082	81 29 26	3080	80 0 52	3077	78 32 14	3073
	Aldebaran	E.	113 42 49	3127	112 15 12	3122	110 47 29	3117	109 19 40	3113
20	Antares	W.	77 28 0	3018	78 57 51	3014	80 27 47	3008	81 57 50	3003
	Mars	E.	50 16 30	3244	48 51 13	3241	47 25 52	3236	46 0 26	3233
	α Arietis	E.	71 8 4	3056	69 39 1	3052	68 9 53	3048	66 40 40	3044
	Aldebaran	E.	101 59 9	3087	100 30 44	3082	99 2 13	3077	97 33 35	3072
21	Antares	W.	89 29 45	2974	91 0 30	2967	92 31 24	2961	94 2 26	2953
	α Aquilæ	W.	47 49 34	4728	48 50 10	4640	49 52 0	4559	50 55 0	4483
	Mars	E.	38 52 2	3210	37 26 5	3206	36 0 3	3202	34 33 56	3198
	α Arietis	E.	59 13 14	3021	57 43 27	3016	56 13 34	3011	54 43 35	3005
	Aldebaran	E.	90 8 41	3042	88 39 20	3034	87 9 50	3026	85 40 12	3022
	Jupiter	E.	106 26 9	3071	104 57 24	3065	103 28 31	3057	101 59 29	3049
	Venus	E.	107 28 42	3452	106 7 24	3445	104 45 58	3437	103 24 23	3429
22	α Aquilæ	W.	56 25 34	4173	57 34 26	4120	58 44 8	4073	59 54 36	4027
	α Arietis	E.	47 12 0	2979	45 41 21	2973	44 10 35	2969	42 39 43	2964

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
14	α Aquilæ	E.	51° 15′ 19″	4610	50° 13′ 3″	4685	49° 11′ 51″	4766	48° 11′ 47″	4854
	Fomalhaut	E.	71 21 46	3293	69 57 26	3301	68 33 16	3311	67 9 17	3319
	α Pegasi	E.	93 3 28	3315	91 39 34	3319	90 15 45	3323	88 52 0	3326
15	SATURN	W.	73 49 28	3083	75 17 58	3086	76 46 25	3087	78 14 50	3090
	Spica	W.	69 58 6	3059	71 27 6	3060	72 56 4	3063	74 24 59	3065
	Antares	W.	24 3 39	3059	25 32 39	3060	27 1 37	3063	28 30 32	3065
	Fomalhaut	E.	60 12 11	3373	58 49 24	3385	57 26 50	3398	56 4 31	3411
	α Pegasi	E.	81 54 19	3346	80 31 1	3351	79 7 49	3356	77 44 42	3360
	MARS	E.	101 0 34	3282	99 36 1	3283	98 11 30	3286	96 47 2	3287
16	SATURN	W.	85 36 27	3095	87 4 43	3096	88 32 58	3096	90 1 13	3096
	Spica	W.	81 49 9	3070	83 17 55	3070	84 46 41	3071	86 15 26	3071
	Antares	W.	35 54 42	3070	37 23 28	3070	38 52 14	3070	40 21 0	3071
	Fomalhaut	E.	49 17 8	3496	47 56 39	3516	46 36 33	3539	45 16 52	3564
	α Pegasi	E.	70 50 36	3389	69 28 7	3396	68 5 46	3403	66 43 33	3410
	MARS	E.	89 45 2	3292	88 20 41	3293	86 56 21	3293	85 32 1	3294
17	SATURN	W.	97 22 25	3095	98 50 41	3095	100 18 57	3094	101 47 14	3092
	Spica	W.	93 39 13	3069	95 8 0	3069	96 36 48	3068	98 5 37	3066
	Antares	W.	47 44 47	3069	49 13 34	3069	50 42 22	3067	52 11 12	3066
	Fomalhaut	E.	38 46 10	3732	37 29 57	3778	36 14 32	3829	35 0 0	3886
	α Pegasi	E.	59 54 48	3457	58 33 36	3469	57 12 37	3481	55 51 52	3495
	MARS	E.	78 30 22	3292	77 6 1	3290	75 41 38	3289	74 17 14	3288
	α Arietis	E.	100 36 47	3105	99 8 43	3104	97 40 38	3102	96 12 31	3101
18	Spica	W.	105 30 10	3057	106 59 12	3056	108 28 16	3053	109 57 23	3051
	Antares	W.	59 35 46	3058	61 4 47	3056	62 33 51	3052	64 2 59	3051
	α Pegasi	E.	49 12 19	3583	47 53 26	3605	46 34 57	3631	45 16 56	3658
	MARS	E.	67 14 51	3280	65 50 16	3278	64 25 39	3276	63 0 59	3273
	α Arietis	E.	88 51 30	3092	87 23 11	3090	85 54 49	3088	84 26 25	3085
19	Antares	W.	71 29 29	3034	72 59 0	3030	74 28 35	3026	75 58 15	3022
	MARS	E.	55 56 53	3259	54 31 54	3255	53 6 50	3252	51 41 42	3248
	α Arietis	E.	77 3 32	3071	75 34 47	3067	74 5 57	3064	72 37 3	3060
	Aldebaran	E.	107 51 46	3108	106 23 46	3103	104 55 40	3098	103 27 28	3092
20	Antares	W.	83 27 59	2998	84 58 14	2992	86 28 37	2986	87 59 7	2980
	MARS	E.	44 34 56	3228	43 9 20	3224	41 43 39	3220	40 17 53	3215
	α Arietis	E.	65 11 22	3039	63 41 58	3035	62 12 29	3030	60 42 54	3026
	Aldebaran	E.	96 4 51	3066	94 36 0	3060	93 7 1	3054	91 37 55	3047
21	Antares	W.	95 33 38	2946	97 4 59	2939	98 36 29	2931	100 8 9	2922
	α Aquilæ	W.	51 59 7	4412	53 4 17	4346	54 10 27	4285	55 17 33	4227
	MARS	E.	33 7 44	3194	31 41 28	3190	30 15 7	3187	28 48 42	3183
	α Arietis	E.	53 13 29	3001	51 43 17	2995	50 12 58	2989	48 42 32	2985
	Aldebaran	E.	84 10 26	3014	82 40 31	3008	81 10 28	3000	79 40 15	2993
	JUPITER	E.	100 30 17	3042	99 0 56	3034	97 31 25	3026	96 1 44	3017
	VENUS	E.	102 2 39	3420	100 40 45	3411	99 18 41	3402	97 56 27	3393
22	α Aquilæ	W.	61 5 49	3983	62 17 45	3942	63 30 22	3903	64 43 39	3866
	α Arietis	E.	41 8 45	2959	39 37 41	2954	38 6 31	2950	36 35 16	2947

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
22	Aldebaran	E.	78° 9′ 53″	2985	76° 39′ 21″	2977	75° 8′ 40″	2969	73° 37′ 48″	2961
	Jupiter	E.	94 31 52	3009	93 1 50	2999	91 31 36	2990	90 1 11	2980
	Venus	E.	96 34 3	3384	95 11 28	3373	93 48 41	3364	92 25 43	3353
	Sun	E.	129 30 26	3989	128 6 2	3980	126 41 27	3969	125 16 39	3959
23	α Aquilæ	W.	65 57 33	3831	67 12 3	3796	68 27 9	3765	69 42 48	3733
	Fomalhaut	W.	36 6 11	3549	37 25 41	3489	38 46 17	3434	40 7 55	3383
	Aldebaran	E.	66 0 53	2918	64 28 57	2909	62 56 50	2900	61 24 31	2891
	Jupiter	E.	82 25 58	2929	80 54 16	2917	79 22 19	2906	77 50 8	2895
	Venus	E.	85 27 47	3297	84 3 32	3285	82 39 3	3272	81 14 19	3259
	Sun	E.	118 9 22	3200	116 43 13	3187	115 16 48	3174	113 50 8	3161
24	α Aquilæ	W.	76 8 48	3598	77 27 25	3574	78 46 28	3550	80 5 57	3526
	Fomalhaut	W.	47 9 26	3176	48 36 4	3141	50 3 24	3109	51 31 23	3078
	Aldebaran	E.	53 40 4	2846	52 6 36	2838	50 32 57	2830	48 59 8	2821
	Jupiter	E.	70 5 24	2832	68 31 38	2819	66 57 35	2806	65 23 15	2792
	Venus	E.	74 6 49	3192	72 40 30	3178	71 13 54	3163	69 47 0	3148
	Sun	E.	106 32 45	3092	105 4 26	3077	103 35 48	3062	102 6 52	3047
25	α Aquilæ	W.	86 49 9	3431	88 10 51	3414	89 32 52	3398	90 55 11	3383
	Fomalhaut	W.	59 0 27	2938	60 31 58	2912	62 4 2	2887	63 36 37	2863
	α Pegasi	W.	39 2 59	3382	40 25 36	3317	41 49 28	3258	43 14 29	3202
	Aldebaran	E.	41 7 36	2789	39 32 54	2786	37 58 8	2785	36 23 20	2784
	Jupiter	E.	57 27 1	2722	55 50 50	2707	54 14 19	2692	52 37 29	2678
	Venus	E.	62 27 55	3070	60 59 9	3054	59 30 3	3038	58 0 37	3022
	Sun	E.	94 37 22	2966	93 6 27	2950	91 35 11	2933	90 3 34	2916
26	Fomalhaut	W.	71 27 7	2750	73 2 40	2729	74 38 41	2708	76 15 10	2688
	α Pegasi	W.	50 34 50	2973	52 5 36	2935	53 37 10	2899	55 9 30	2865
	Mars	W.	22 31 27	2762	24 8 45	2733	25 44 41	2706	27 21 13	2680
	Jupiter	E.	44 28 20	2604	42 49 31	2590	41 10 22	2575	39 30 53	2562
	Venus	E.	50 28 21	2939	48 56 52	2923	47 25 2	2906	45 52 51	2891
	Sun	E.	82 19 57	2828	80 46 6	2810	79 11 51	2792	77 37 13	2775
27	Fomalhaut	W.	84 24 15	2592	86 3 21	2574	87 42 52	2557	89 22 46	2540
	α Pegasi	W.	63 1 44	2712	64 38 8	2685	66 15 8	2659	67 52 43	2635
	Mars	W.	35 32 5	2566	37 11 47	2545	38 51 57	2525	40 32 36	2505
	Venus	E.	38 6 54	2814	36 32 44	2801	34 58 17	2788	33 23 33	2776
	Sun	E.	69 38 6	2684	68 1 4	2666	66 23 39	2648	64 45 49	2631
28	α Pegasi	W.	76 8 40	2523	77 49 21	2503	79 30 30	2485	81 12 4	2467
	Mars	W.	49 2 38	2411	50 45 57	2393	52 29 42	2376	54 13 51	2359
	α Arietis	W.	32 54 44	2340	34 39 45	2315	36 25 23	2291	38 11 35	2269
	Sun	E.	56 30 47	2546	54 50 38	2530	53 10 6	2514	51 29 12	2499
29	Mars	W.	63 0 28	2283	64 46 53	2268	66 33 39	2256	68 20 44	2243
	α Arietis	W.	47 10 16	2174	48 59 22	2159	50 48 52	2143	52 38 45	2129
	Sun	E.	42 59 35	2430	41 16 43	2418	39 33 34	2407	37 50 9	2397
30	Mars	W.	77 20 34	2189	79 9 18	2180	80 58 16	2172	82 47 26	2165
	α Arietis	W.	61 53 16	2069	63 45 3	2060	65 37 4	2052	67 29 18	2043
	Sun	E.	29 9 56	2362	27 25 27	2360	25 40 55	2359	23 56 22	2362

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
22	Aldebaran	E.	72° 6′ 46″	2953	70° 35′ 34″	2944	69° 4′ 11″	2935	67° 32′ 37″	2927
	Jupiter	E.	88 30 33	2970	86 59 43	2961	85 28 41	2950	83 57 26	2940
	Venus	E.	91 2 33	3343	89 39 11	3332	88 15 36	3320	86 51 48	3309
	Sun	E.	123 51 39	3247	122 26 25	3236	121 0 58	3224	119 35 17	3212
23	α Aquilæ	W.	70 59 0	3704	72 15 43	3676	73 32 56	3649	74 50 38	3623
	Fomalhaut	W.	41 30 31	3336	42 54 1	3292	44 18 22	3251	45 43 31	3212
	Aldebaran	E.	59 52 1	2882	58 19 19	2873	56 46 26	2864	55 13 21	2856
	Jupiter	E.	76 17 43	2883	74 45 2	2871	73 12 6	2858	71 38 53	2845
	Venus	E.	79 49 20	3247	78 24 6	3234	76 58 37	3220	75 32 51	3206
	Sun	E.	112 23 12	3148	110 56 0	3134	109 28 32	3120	108 0 47	3106
24	α Aquilæ	W.	81 25 50	3506	82 46 7	3487	84 6 46	3467	85 27 47	3448
	Fomalhaut	W.	53 0 0	3047	54 29 14	3018	55 59 4	2990	57 29 29	2964
	Aldebaran	E.	47 25 8	2814	45 50 58	2807	44 16 39	2800	42 42 11	2795
	Jupiter	E.	63 48 37	2779	62 13 41	2764	60 38 26	2750	59 2 53	2736
	Venus	E.	68 19 48	3133	66 52 18	3117	65 24 29	3102	63 56 22	3086
	Sun	E.	100 37 37	3031	99 8 3	3015	97 38 9	3000	96 7 56	2983
25	α Aquilæ	W.	92 17 47	3368	93 40 40	3356	95 3 47	3344	96 27 8	3332
	Fomalhaut	W.	65 9 43	2839	66 43 20	2817	68 17 26	2794	69 52 2	2772
	α Pegasi	W.	44 40 36	3150	46 7 45	3102	47 35 52	3056	49 4 55	3014
	Aldebaran	E.	34 48 31	2786	33 13 45	2792	31 39 6	2799	30 4 37	2811
	Jupiter	E.	51 0 19	2663	49 22 49	2648	47 44 59	2633	46 6 49	2619
	Venus	E.	56 30 51	3005	55 0 44	2989	53 30 17	2972	51 59 29	2956
	Sun	E.	88 31 35	2898	86 59 14	2881	85 26 31	2863	83 53 25	2846
26	Fomalhaut	W.	77 52 6	2668	79 29 29	2649	81 7 18	2629	82 45 33	2610
	α Pegasi	W.	56 42 34	2831	58 16 21	2800	59 50 49	2769	61 25 57	2740
	Mars	W.	28 58 20	2655	30 36 0	2632	32 14 11	2610	33 52 53	2588
	Jupiter	E.	37 51 6	2549	36 11 1	2536	34 30 38	2525	32 49 59	2514
	Venus	E.	44 20 20	2675	42 47 29	2659	41 14 17	2643	39 40 45	2626
	Sun	E.	76 2 12	2756	74 26 46	2738	72 50 57	2719	71 14 43	2702
27	Fomalhaut	W.	91 3 4	2524	92 43 44	2508	94 24 46	2492	96 6 10	2478
	α Pegasi	W.	69 30 51	2610	71 9 32	2588	72 48 44	2565	74 28 27	2543
	Mars	W.	42 13 42	2485	43 55 16	2466	45 37 17	2448	47 19 44	2429
	Venus	E.	31 48 34	2766	30 13 21	2756	28 37 56	2749	27 2 21	2746
	Sun	E.	63 7 36	2613	61 28 59	2596	59 49 58	2579	58 10 34	2562
28	α Pegasi	W.	82 54 4	2450	84 36 28	2434	86 19 14	2419	88 2 22	2404
	Mars	W.	55 58 24	2343	57 43 21	2327	59 28 41	2311	61 14 24	2297
	α Arietis	W.	39 58 20	2248	41 45 36	2228	43 33 22	2209	45 21 36	2192
	Sun	E.	49 47 57	2484	48 6 21	2470	46 24 25	2455	44 42 9	2443
29	Mars	W.	70 8 8	2231	71 55 50	2219	73 43 49	2208	75 32 4	2198
	α Arietis	W.	54 29 0	2115	56 19 36	2103	58 10 31	2090	60 1 45	2079
	Sun	E.	36 6 30	2387	34 22 37	2380	32 38 33	2373	30 54 19	2366
30	Mars	W.	84 36 46	2159	86 26 16	2153	88 15 55	2147	90 5 42	2143
	α Arietis	W.	69 21 45	2036	71 14 23	2030	73 7 10	2025	75 0 6	2020
	Sun	E.	22 11 52	2367	20 27 30	2377	18 43 22	2393	16 59 37	2415

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Added to / Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Wed.	1	8 46 27.20	9.708	N.17 58 22.4	−37.96	15 48.03	66.62	6 6.87	0.148
Thur.	2	8 50 19.89	9.683	17 43 2.4	38.69	15 48.16	66.54	6 3.01	0.173
Frid.	3	8 54 11.96	9.657	17 27 25.0	39.41	15 48.30	66.45	5 58.55	0.199
Sat.	4	8 58 3.43	9.632	17 11 30.7	−40.12	15 48.43	66.37	5 53.47	0.225
SUN.	5	9 1 54.29	9.606	16 55 19.7	40.81	15 48.58	66.28	5 47.78	0.250
Mon.	6	9 5 44.53	9.581	16 38 52.3	41.48	15 48.73	66.20	5 41.49	0.275
Tues.	7	9 9 34.16	9.555	16 22 8.8	−42.14	15 48.88	66.11	5 34.58	0.300
Wed.	8	9 13 23.18	9.530	16 5 9.6	42.79	15 49.04	66.03	5 27.07	0.325
Thur.	9	9 17 11.61	9.505	15 47 55.0	43.43	15 49.20	65.94	5 18.96	0.350
Frid.	10	9 20 59.43	9.480	15 30 25.3	−44.05	15 49.36	65.86	5 10.25	0.375
Sat.	11	9 24 46.67	9.456	15 12 40.8	44.66	15 49.53	65.78	5 0.96	0.399
SUN.	12	9 28 33.32	9.432	14 54 41.8	45.26	15 49.70	65.70	4 51.08	0.423
Mon.	13	9 32 19.41	9.409	14 36 28.7	−45.84	15 49.88	65.62	4 40.64	0.447
Tues.	14	9 36 4.93	9.386	14 18 1.6	46.41	15 50.05	65.54	4 29.64	0.470
Wed.	15	9 39 49.92	9.363	13 59 21.0	46.96	15 50.23	65.46	4 18.10	0.492
Thur.	16	9 43 34.37	9.341	13 40 27.0	−47.51	15 50.41	65.39	4 6.03	0.514
Frid.	17	9 47 18.30	9.320	13 21 20.1	48.05	15 50.60	65.31	3 53.44	0.535
Sat.	18	9 51 1.73	9.299	13 2 0.5	48.58	15 50.78	65.24	3 40.35	0.556
SUN.	19	9 54 44.66	9.279	12 42 28.4	−49.09	15 50.97	65.17	3 26.76	0.576
Mon.	20	9 58 27.13	9.260	12 22 44.2	49.59	15 51.16	65.10	3 12.71	0.595
Tues.	21	10 2 9.13	9.241	12 2 48.2	50.08	15 51.35	65.03	2 58.20	0.614
Wed.	22	10 5 50.69	9.223	11 42 40.6	−50.55	15 51.54	64.96	2 43.24	0.632
Thur.	23	10 9 31.82	9.205	11 22 21.7	51.01	15 51.74	64.90	2 27.86	0.650
Frid.	24	10 13 12.53	9.188	11 1 52.0	51.46	15 51.94	64.84	2 12.06	0.667
Sat.	25	10 16 52.84	9.172	10 41 11.5	−51.90	15 52.14	64.78	1 55.86	0.683
SUN.	26	10 20 32.77	9.156	10 20 20.8	52.32	15 52.35	64.72	1 39.28	0.699
Mon.	27	10 24 12.30	9.140	9 59 20.2	52.73	15 52.56	64.66	1 22.31	0.714
Tues.	28	10 27 51.48	9.125	9 38 9.9	−53.12	15 52.77	64.61	1 4.98	0.729
Wed.	29	10 31 30.32	9.111	9 16 50.3	53.49	15 52.99	64.56	0 47.30	0.743
Thur.	30	10 35 8.81	9.097	8 55 21.7	53.85	15 53.21	64.51	0 29.29	0.757
Frid.	31	10 38 46.98	9.084	8 33 44.5	54.21	15 53.44	64.46	0 10.96	0.770
Sat.	32	10 42 24.83	9.071	N. 8 11 59.1	−54.56	15 53.67	64.41	0 7.70	0.783

Note.—The mean time of semidiameter passing may be found by subtracting 0s.18 from the sidereal time.

The sign − prefixed to the hourly change of declination indicates that north declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Subtracted from Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Wed.	1	8 46 26.21	9.709	N.17 58 26.2	−37.96	6 6.88	0.148	8 40 19.32
Thur.	2	8 50 18.91	9.684	17 43 6.2	38.69	6 3.03	0.173	8 44 15.88
Frid.	3	8 54 11.00	9.658	17 27 28.9	39.41	5 58.57	0.199	8 48 12.44
Sat.	4	8 58 2.49	9.633	17 11 34.6	−40.12	5 53.49	0.225	8 52 8.99
SUN.	5	9 1 53.36	9.607	16 55 23.6	40.81	5 47.81	0.250	8 56 5.55
Mon.	6	9 5 43.62	9.582	16 38 56.1	41.48	5 41.51	0.275	9 0 2.11
Tues.	7	9 9 33.27	9.556	16 22 12.6	−42.14	5 34.61	0.300	9 3 58.66
Wed.	8	9 13 22.32	9.531	16 5 13.4	42.79	5 27.10	0.325	9 7 55.22
Thur.	9	9 17 10.76	9.506	15 47 58.8	43.43	5 18.99	0.350	9 11 51.78
Frid.	10	9 20 58.61	9.481	15 30 29.0	−44.05	5 10.28	0.375	9 15 48.33
Sat.	11	9 24 45.88	9.457	15 12 44.4	44.66	5 0.99	0.399	9 19 44.89
SUN.	12	9 28 32.56	9.433	14 54 45.4	45.26	4 51.11	0.423	9 23 41.44
Mon.	13	9 32 18.67	9.410	14 36 32.2	−45.84	4 40.67	0.447	9 27 38.00
Tues.	14	9 36 4.23	9.387	14 18 5.0	46.41	4 29.67	0.470	9 31 34.56
Wed.	15	9 39 49.25	9.364	13 59 24.3	46.97	4 18.14	0.492	9 35 31.11
Thur.	16	9 43 33.73	9.343	13 40 30.2	−47.52	4 6.06	0.514	9 39 27.67
Frid.	17	9 47 17.69	9.322	13 21 23.2	48.06	3 53.47	0.535	9 43 24.22
Sat.	18	9 51 1.16	9.301	13 2 3.4	48.59	3 40.38	0.556	9 47 20.78
SUN.	19	9 54 44.13	9.280	12 42 31.2	−49.10	3 26.80	0.576	9 51 17.33
Mon.	20	9 58 26.63	9.261	12 22 46.8	49.60	3 12.74	0.595	9 55 13.89
Tues.	21	10 2 8.67	9.243	12 2 50.6	50.09	2 58.23	0.614	9 59 10.44
Wed.	22	10 5 50.27	9.225	11 42 42.8	−50.56	2 43.27	0.632	10 3 7.00
Thur.	23	10 9 31.44	9.207	11 22 23.8	51.02	2 27.89	0.650	10 7 3.55
Frid.	24	10 13 12.20	9.190	11 1 53.8	51.47	2 12.09	0.667	10 11 0.11
Sat.	25	10 16 52.55	9.174	10 41 13.1	−51.91	1 55.88	0.683	10 14 56.66
SUN.	26	10 20 32.51	9.158	10 20 22.2	52.33	1 39.29	0.699	10 18 53.22
Mon.	27	10 24 12.10	9.142	9 59 21.3	52.74	1 22.32	0.714	10 22 49.77
Tues.	28	10 27 51.32	9.127	9 38 10.8	−53.13	1 4.99	0.729	10 26 46.33
Wed.	29	10 31 30.19	9.113	9 16 50.9	53.50	0 47.31	0.743	10 30 42.88
Thur.	30	10 35 8.73	9.099	8 55 22.1	53.86	0 29.29	0.757	10 34 39.44
Frid.	31	10 38 46.95	9.086	8 33 44.6	54.22	0 10.96	0.770	10 38 35.99
Sat.	32	10 42 24.85	9.073	N. 8 11 58.9	−54.57	0 7.70	0.783	10 42 32.55

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing.

Diff. for 1 Hour,
$+9^{s}.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	213	129 10 36.3	10 6.9	143.63	+ 0.42	0.0063511	−24.0	15 17 10.01
2	214	130 8 3.9	7 34.4	143.66	0.35	0.0062923	25.0	15 13 14.10
3	215	131 5 32.3	5 2.6	143.70	0.24	0.0062312	26.0	15 9 18.19
4	216	132 3 1.7	2 31.8	143.74	+ 0.11	0.0061676	−26.9	15 5 22.28
5	217	133 0 31.9	0 1.9	143.78	− 0.02	0.0061019	27.8	15 1 26.37
6	218	133 58 2.9	57 32.7	143.81	0.14	0.0060340	28.7	14 57 30.46
7	219	134 55 34.8	55 4.5	143.84	− 0.27	0.0059640	−29.6	14 53 34.54
8	220	135 53 7.4	52 36.9	143.88	0.38	0.0058920	30.4	14 49 38.63
9	221	136 50 40.9	50 10.3	143.91	0.48	0.0058181	31.1	14 45 42.72
10	222	137 48 15.2	47 44.4	143.95	− 0.54	0.0057427	−31.7	14 41 46.81
11	223	138 45 50.4	45 19.5	143.99	0.58	0.0056659	32.3	14 37 50.90
12	224	139 43 26.7	42 55.6	144.03	0.60	0.0055876	32.9	14 33 54.99
13	225	140 41 3.8	40 32.6	144.07	− 0.58	0.0055081	−33.4	14 29 59.08
14	226	141 38 42.1	38 10.7	144.12	0.53	0.0054274	33.8	14 26 3.17
15	227	142 36 21.5	35 50.0	144.17	0.46	0.0053459	34.2	14 22 7.26
16	228	143 34 2.2	33 30.6	144.22	− 0.35	0.0052632	−34.6	14 18 11.36
17	229	144 31 44.2	31 12.4	144.28	0.24	0.0051796	35.0	14 14 15.44
18	230	145 29 27.6	28 55.7	144.34	− 0.11	0.0050951	35.4	14 10 19.53
19	231	146 27 12.5	26 40.4	144.40	+ 0.02	0.0050097	−35.8	14 6 23.63
20	232	147 24 58.9	24 26.7	144.47	0.15	0.0049232	36.2	14 2 27.72
21	233	148 22 46.9	22 14.6	144.54	0.28	0.0048358	36.7	13 58 31.80
22	234	149 20 36.8	20 4.3	144.61	+ 0.40	0.0047472	−37.2	13 54 35.90
23	235	150 18 28.2	17 55.6	144.68	0.48	0.0046573	37.7	13 50 39.99
24	236	151 16 21.6	15 48.9	144.76	0.54	0.0045661	38.3	13 46 44.08
25	237	152 14 16.7	13 43.8	144.83	+ 0.57	0.0044735	−38.9	13 42 48.17
26	238	153 12 13.6	11 40.6	144.91	0.59	0.0043793	39.6	13 38 52.26
27	239	154 10 12.2	9 39.1	144.98	0.55	0.0042836	40.3	13 34 56.35
28	240	155 8 12.7	7 39.5	145.06	+ 0.50	0.0041860	−41.0	13 31 0.44
29	241	156 6 14.9	5 41.5	145.13	0.42	0.0040868	41.7	13 27 4.54
30	242	157 4 18.8	3 45.3	145.20	0.31	0.0039857	42.5	13 23 8.63
31	243	158 2 24.5	1 50.9	145.27	0.19	0.0038830	43.2	13 19 12.72
32	244	158 60 31.8	59 58.1	145.34	+ 0.07	0.0037783	−44.0	13 15 16.81

Note.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour, $9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 43.0	16 41.0	61 14.7	−0.43	61 7.1	−0.83	0 10.2	2.53	29.3
2	16 37.6	16 33.1	60 54.8	1.20	60 38.3	1.53	1 8.2	2.31	1.0
3	16 27.6	16 21.3	60 18.1	1.81	59 54.8	2.04	2 1.2	2.12	2.0
4	16 14.3	16 6.8	59 29.1	−2.21	59 1.7	−2.33	2 50.3	1.99	3.0
5	15 59.1	15 51.2	58 33.3	2.38	58 4.5	2.39	3 37.1	1.92	4.0
6	15 43.5	15 35.9	57 36.0	2.34	57 8.3	2.26	4 23.0	1.91	5.0
7	15 28.7	15 21.9	56 41.7	−2.15	56 16.7	−2.01	5 9.2	1.94	6.0
8	15 15.6	15 9.8	55 53.5	1.85	55 32.4	1.67	5 56.5	2.01	7.0
9	15 4.7	15 0.1	55 13.4	1.49	54 56.6	1.30	6 45.7	2.08	8.0
10	14 56.1	14 52.8	54 42.1	−1.11	54 29.9	−0.93	7 36.4	2.14	9.0
11	14 50.1	14 48.0	54 19.9	0.74	54 12.1	0.57	8 28.2	2.17	10.0
12	14 46.4	14 45.3	54 6.3	0.40	54 2.5	−0.24	9 20.0	2.13	11.0
13	14 44.8	14 44.8	54 0.6	−0.09	54 0.4	+0.05	10 10.4	2.06	12.0
14	14 45.2	14 46.0	54 1.8	+0.18	54 4.8	0.30	10 58.7	1.96	13.0
15	14 47.1	14 48.7	54 9.1	0.41	54 14.7	0.52	11 44.4	1.85	14.0
16	14 50.6	14 52.7	54 21.6	+0.62	54 29.6	+0.71	12 27.9	1.77	15.0
17	14 55.2	14 58.0	54 38.7	0.80	54 48.8	0.89	13 9.6	1.71	16.0
18	15 1.0	15 4.3	55 0.0	0.97	55 12.1	1.05	13 50.4	1.69	17.0
19	15 7.9	15 11.8	55 25.3	+1.15	55 39.6	+1.23	14 31.4	1.73	18.0
20	15 16.0	15 20.4	55 54.9	1.32	56 11.2	1.40	15 13.8	1.81	19.0
21	15 25.1	15 30.1	56 28.5	1.48	56 46.8	1.57	15 58.8	1.95	20.0
22	15 35.3	15 40.8	57 6.1	+1.64	57 26.1	+1.70	16 47.7	2.14	21.0
23	15 46.4	15 52.2	57 46.9	1.75	58 8.1	1.78	17 41.5	2.35	22.0
24	15 58.1	16 3.9	58 29.6	1.79	58 51.0	1.77	18 40.6	2.56	23.0
25	16 9.6	16 15.1	59 12.0	+1.71	59 32.1	+1.62	19 43.7	2.68	24.0
26	16 20.2	16 24.8	59 50.8	1.48	60 7.6	1.30	20 48.4	2.68	25.0
27	16 28.7	16 31.8	60 22.0	1.08	60 33.5	0.81	21 51.6	2.57	26.0
28	16 34.0	16 35.2	60 41.5	+0.52	60 45.9	+0.19	22 51.1	2.38	27.0
29	16 35.2	16 34.2	60 46.1	−0.15	60 42.1	−0.50	23 46.1	2.21	28.0
30	16 32.0	16 28.6	60 34.1	0.86	60 21.9	1.17	δ		29.0
31	16 24.3	16 19.1	60 6.0	1.46	59 46.8	1.72	0 37.3	2.07	0.7
32	16 13.1	16 6.5	59 24.8	−1.93	59 0.5	−2.09	1 25.9	1.99	1.7

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 50 7.21	2.5892	N.21 59 26.9	12.173
1	8 52 42.32	2.5811	21 47 12.0	12.322
2	8 55 16.94	2.5730	21 34 48.3	12.468
3	8 57 51.08	2.5649	21 22 15.9	12.612
4	9 0 24.73	2.5568	21 9 34.9	12.753
5	9 2 57.89	2.5486	20 56 45.5	12.893
6	9 5 30.56	2.5404	20 43 47.8	13.030
7	9 8 2.74	2.5322	20 30 41.9	13.164
8	9 10 34.43	2.5240	20 17 28.1	13.296
9	9 13 5.62	2.5158	20 4 6.4	13.426
10	9 15 36.32	2.5075	19 50 37.0	13.553
11	9 18 6.52	2.4993	19 37 0.1	13.677
12	9 20 36.23	2.4911	19 23 15.8	13.799
13	9 23 5.45	2.4828	19 9 24.2	13.919
14	9 25 34.17	2.4746	18 55 25.5	14.035
15	9 28 2.40	2.4664	18 41 19.9	14.151
16	9 30 30.14	2.4583	18 27 7.4	14.264
17	9 32 57.39	2.4502	18 12 48.2	14.374
18	9 35 24.16	2.4421	17 58 22.5	14.482
19	9 37 50.44	2.4339	17 43 50.4	14.587
20	9 40 16.23	2.4258	17 29 12.1	14.690
21	9 42 41.54	2.4178	17 14 27.6	14.791
22	9 45 6.37	2.4098	16 59 37.2	14.888
23	9 47 30.72	2.4019	N.16 44 41.0	14.983

THURSDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 49 54.60	2.3940	N.16 29 39.2	15.077
1	9 52 18.00	2.3862	16 14 31.8	15.168
2	9 54 40.94	2.3784	15 59 19.1	15.256
3	9 57 3.41	2.3705	15 44 1.1	15.342
4	9 59 25.41	2.3628	15 28 38.0	15.426
5	10 1 46.95	2.3552	15 13 10.0	15.508
6	10 4 8.04	2.3477	14 57 37.1	15.587
7	10 6 28.67	2.3401	14 41 59.6	15.663
8	10 8 48.85	2.3327	14 26 17.5	15.738
9	10 11 8.59	2.3253	14 10 31.0	15.810
10	10 13 27.89	2.3180	13 54 40.3	15.879
11	10 15 46.75	2.3107	13 38 45.5	15.947
12	10 18 5.17	2.3034	13 22 46.6	16.013
13	10 20 23.16	2.2963	13 6 43.9	16.076
14	10 22 40.73	2.2893	12 50 37.5	16.137
15	10 24 57.88	2.2823	12 34 27.5	16.195
16	10 27 14.61	2.2753	12 18 14.1	16.251
17	10 29 30.92	2.2685	12 1 57.4	16.306
18	10 31 46.83	2.2618	11 45 37.4	16.358
19	10 34 2.34	2.2552	11 29 14.4	16.408
20	10 36 17.45	2.2485	11 12 48.4	16.457
21	10 38 32.16	2.2420	10 56 19.6	16.502
22	10 40 46.49	2.2356	10 39 48.2	16.545
23	10 43 0.44	2.2292	10 23 14.2	16.587
24	10 45 14.00	2.2229	N.10 6 37.7	16.627

FRIDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 45 14.00	2.2229	N.10 6 37.7	16.627
1	10 47 27.19	2.2168	9 49 58.9	16.664
2	10 49 40.02	2.2108	9 33 18.0	16.699
3	10 51 52.49	2.2048	9 16 35.0	16.732
4	10 54 4.60	2.1988	8 59 50.1	16.764
5	10 56 16.35	2.1930	8 43 3.3	16.794
6	10 58 27.76	2.1873	8 26 14.8	16.822
7	11 0 38.83	2.1817	8 9 24.7	16.847
8	11 2 49.56	2.1762	7 52 33.2	16.870
9	11 4 59.97	2.1707	7 35 40.3	16.892
10	11 7 10.05	2.1653	7 18 46.1	16.912
11	11 9 19.81	2.1601	7 1 50.8	16.930
12	11 11 29.26	2.1549	6 44 54.5	16.946
13	11 13 38.40	2.1498	6 27 57.3	16.960
14	11 15 47.24	2.1448	6 10 59.3	16.973
15	11 17 55.78	2.1399	5 54 0.5	16.985
16	11 20 4.03	2.1352	5 37 1.1	16.993
17	11 22 12.00	2.1305	5 20 1.3	17.000
18	11 24 19.69	2.1259	5 3 1.1	17.006
19	11 26 27.11	2.1213	4 46 0.6	17.010
20	11 28 34.25	2.1168	4 28 59.9	17.012
21	11 30 41.13	2.1126	4 11 59.2	17.012
22	11 32 47.76	2.1084	3 54 58.5	17.011
23	11 34 54.14	2.1042	N. 3 37 57.9	17.008

SATURDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 37 0.27	2.1002	N. 3 20 57.6	17.003
1	11 39 6.16	2.0962	3 3 57.6	16.998
2	11 41 11.82	2.0924	2 46 57.9	16.990
3	11 43 17.25	2.0887	2 29 58.8	16.980
4	11 45 22.46	2.0851	2 13 0.3	16.969
5	11 47 27.46	2.0815	1 56 2.5	16.957
6	11 49 32.24	2.0779	1 39 5.5	16.943
7	11 51 36.81	2.0746	1 22 9.3	16.928
8	11 53 41.19	2.0714	1 5 14.1	16.911
9	11 55 45.38	2.0682	0 48 20.0	16.892
10	11 57 49.38	2.0651	0 31 27.0	16.873
11	11 59 53.19	2.0621	N. 0 14 35.2	16.852
12	12 1 56.83	2.0592	S. 0 2 15.2	16.829
13	12 4 0.29	2.0563	0 19 4.2	16.805
14	12 6 3.59	2.0537	0 35 51.8	16.780
15	12 8 6.74	2.0511	0 52 37.8	16.753
16	12 10 9.73	2.0485	1 9 22.2	16.725
17	12 12 12.56	2.0460	1 26 4.8	16.695
18	12 14 15.25	2.0437	1 42 45.6	16.665
19	12 16 17.81	2.0415	1 59 24.6	16.633
20	12 18 20.23	2.0393	2 16 1.5	16.598
21	12 20 22.52	2.0372	2 32 36.3	16.563
22	12 22 24.69	2.0352	2 49 9.0	16.528
23	12 24 26.74	2.0332	3 5 39.6	16.491
24	12 26 28.68	2.0314	S. 3 22 7.9	16.452

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 5.					**TUESDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	12 26 28.68	2.0314	S. 3 22 7.9	16.452	0	14 3 27.36	2.0374	S. 15 26 24.5	13.347
1	12 28 30.51	2.0297	3 38 33.9	16.412	1	14 5 29.66	2.0392	15 39 42.7	13.260
2	12 30 32.25	2.0281	3 54 57.4	16.370	2	14 7 32.07	2.0410	15 52 55.7	13.172
3	12 32 33.89	2.0266	4 11 18.3	16.328	3	14 9 34.58	2.0428	16 6 3.3	13.083
4	12 34 35.44	2.0252	4 27 36.7	16.285	4	14 11 37.21	2.0447	16 19 5.6	12.993
5	12 36 36.91	2.0238	4 43 52.5	16.241	5	14 13 39.95	2.0467	16 32 2.5	12.902
6	12 38 38.29	2.0224	5 0 5.6	16.195	6	14 15 42.81	2.0487	16 44 53.9	12.811
7	12 40 39.60	2.0212	5 16 15.9	16.147	7	14 17 45.80	2.0508	16 57 39.8	12.719
8	12 42 40.84	2.0202	5 32 23.3	16.099	8	14 19 48.91	2.0528	17 10 20.2	12.626
9	12 44 42.02	2.0192	5 48 27.8	16.050	9	14 21 52.14	2.0549	17 22 54.9	12.532
10	12 46 43.14	2.0182	6 4 29.3	16.000	10	14 23 55.50	2.0571	17 35 24.0	12.437
11	12 48 44.20	2.0173	6 20 27.8	15.949	11	14 25 59.00	2.0594	17 47 47.4	12.342
12	12 50 45.21	2.0165	6 36 23.2	15.897	12	14 28 2.63	2.0617	18 0 5.0	12.247
13	12 52 46.18	2.0158	6 52 15.4	15.843	13	14 30 6.40	2.0640	18 12 16.9	12.149
14	12 54 47.11	2.0152	7 8 4.3	15.788	14	14 32 10.31	2.0663	18 24 22.9	12.051
15	12 56 48.00	2.0146	7 23 49.9	15.732	15	14 34 14.36	2.0687	18 36 23.0	11.952
16	12 58 48.86	2.0142	7 39 32.1	15.675	16	14 36 18.56	2.0712	18 48 17.2	11.853
17	13 0 49.70	2.0138	7 55 10.9	15.617	17	14 38 22.90	2.0736	19 0 5.4	11.754
18	13 2 50.52	2.0135	8 10 46.2	15.558	18	14 40 27.39	2.0761	19 11 47.7	11.654
19	13 4 51.32	2.0133	8 26 17.9	15.498	19	14 42 32.03	2.0786	19 23 23.9	11.552
20	13 6 52.11	2.0132	8 41 46.0	15.437	20	14 44 36.82	2.0812	19 34 53.9	11.449
21	13 8 52.90	2.0131	8 57 10.4	15.376	21	14 46 41.77	2.0837	19 46 17.8	11.346
22	13 10 53.68	2.0131	9 12 31.1	15.313	22	14 48 46.87	2.0863	19 57 35.5	11.243
23	13 12 54.47	2.0132	S. 9 27 47.9	15.248	23	14 50 52.13	2.0890	S. 20 8 47.0	11.139
	MONDAY 6.					**WEDNESDAY 8.**			
0	13 14 55.26	2.0134	S. 9 43 0.8	15.183	0	14 52 57.55	2.0917	S. 20 19 52.2	11.033
1	13 16 56.07	2.0136	9 58 9.8	15.118	1	14 55 3.13	2.0944	20 30 51.0	10.927
2	13 18 56.89	2.0138	10 13 14.9	15.051	2	14 57 8.87	2.0971	20 41 43.5	10.821
3	13 20 57.73	2.0142	10 28 15.9	14.982	3	14 59 14.78	2.0998	20 52 29.6	10.715
4	13 22 58.59	2.0147	10 43 12.8	14.913	4	15 1 20.85	2.1025	21 3 9.3	10.607
5	13 24 59.49	2.0152	10 58 5.5	14.843	5	15 3 27.08	2.1053	21 13 42.4	10.498
6	13 27 0.42	2.0158	11 12 54.0	14.772	6	15 5 33.48	2.1081	21 24 9.0	10.388
7	13 29 1.39	2.0165	11 27 38.2	14.701	7	15 7 40.05	2.1109	21 34 29.0	10.278
8	13 31 2.40	2.0172	11 42 18.1	14.629	8	15 9 46.79	2.1137	21 44 42.4	10.167
9	13 33 3.45	2.0179	11 56 53.7	14.556	9	15 11 53.69	2.1164	21 54 49.1	10.056
10	13 35 4.55	2.0188	12 11 24.8	14.481	10	15 14 0.76	2.1193	22 4 49.1	9.944
11	13 37 5.71	2.0198	12 25 51.4	14.406	11	15 16 8.00	2.1222	22 14 42.3	9.831
12	13 39 6.93	2.0208	12 40 13.5	14.330	12	15 18 15.42	2.1251	22 24 28.8	9.718
13	13 41 8.21	2.0218	12 54 31.0	14.252	13	15 20 23.01	2.1279	22 34 8.5	9.604
14	13 43 9.55	2.0229	13 8 43.8	14.174	14	15 22 30.77	2.1307	22 43 41.3	9.488
15	13 45 10.96	2.0241	13 22 51.9	14.096	15	15 24 38.70	2.1336	22 53 7.1	9.372
16	13 47 12.44	2.0253	13 36 55.3	14.016	16	15 26 46.80	2.1365	23 2 26.0	9.257
17	13 49 14.00	2.0267	13 50 53.8	13.934	17	15 28 55.08	2.1394	23 11 37.9	9.141
18	13 51 15.61	2.0281	14 4 47.4	13.853	18	15 31 3.53	2.1422	23 20 42.9	9.024
19	13 53 17.37	2.0295	14 18 36.1	13.771	19	15 33 12.15	2.1451	23 29 40.8	8.906
20	13 55 19.18	2.0309	14 32 19.9	13.688	20	15 35 20.94	2.1480	23 38 31.6	8.787
21	13 57 21.08	2.0325	14 45 58.7	13.605	21	15 37 29.91	2.1509	23 47 15.2	8.667
22	13 59 23.08	2.0341	14 59 32.5	13.520	22	15 39 39.05	2.1537	23 55 51.6	8.547
23	14 1 25.17	2.0357	15 13 1.1	13.434	23	15 41 48.35	2.1565	24 4 20.8	8.427
24	14 3 27.36	2.0374	S. 15 26 24.5	13.347	24	15 43 57.83	2.1594	S. 24 12 42.8	8.306

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	15 43 57.83	2.1594	S.24 12 42.8	8.306
1	15 46 7.48	2.1622	24 20 57.5	8.184
2	15 48 17.30	2.1650	24 29 4.9	8.061
3	15 50 27.28	2.1677	24 37 4.9	7.938
4	15 52 37.43	2.1705	24 44 57.5	7.815
5	15 54 47.74	2.1732	24 52 42.7	7.692
6	15 56 58.22	2.1760	25 0 20.5	7.567
7	15 59 8.86	2.1787	25 7 50.8	7.442
8	16 1 19.66	2.1814	25 15 13.5	7.316
9	16 3 30.63	2.1841	25 22 28.7	7.190
10	16 5 41.75	2.1867	25 29 36.3	7.063
11	16 7 53.03	2.1893	25 36 36.3	6.936
12	16 10 4.47	2.1919	25 43 28.6	6.808
13	16 12 16.06	2.1944	25 50 13.2	6.679
14	16 14 27.80	2.1969	25 56 50.1	6.551
15	16 16 39.69	2.1994	26 3 19.3	6.422
16	16 18 51.73	2.2018	26 9 40.7	6.292
17	16 21 3.91	2.2043	26 15 54.3	6.162
18	16 23 16.24	2.2067	26 22 0.1	6.031
19	16 25 28.71	2.2090	26 27 58.0	5.899
20	16 27 41.32	2.2113	26 33 48.0	5.767
21	16 29 54.06	2.2135	26 39 30.1	5.635
22	16 32 6.94	2.2157	26 45 4.2	5.503
23	16 34 19.94	2.2178	S.26 50 30.4	5.370

FRIDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	16 36 33.07	2.2199	S.26 55 48.6	5.237
1	16 38 46.33	2.2220	27 0 58.8	5.103
2	16 40 59.71	2.2239	27 6 0.9	4.968
3	16 43 13.20	2.2258	27 10 55.0	4.834
4	16 45 26.81	2.2277	27 15 41.0	4.699
5	16 47 40.53	2.2296	27 20 18.9	4.563
6	16 49 54.36	2.2313	27 24 48.6	4.427
7	16 52 8.29	2.2330	27 29 10.2	4.292
8	16 54 22.32	2.2347	27 33 23.6	4.156
9	16 56 36.46	2.2364	27 37 28.9	4.020
10	16 58 50.69	2.2379	27 41 26.0	3.882
11	17 1 5.01	2.2393	27 45 14.8	3.744
12	17 3 19.41	2.2407	27 48 55.3	3.607
13	17 5 33.90	2.2421	27 52 27.6	3.470
14	17 7 48.46	2.2433	27 55 51.7	3.332
15	17 10 3.10	2.2446	27 59 7.5	3.194
16	17 12 17.81	2.2457	28 2 15.0	3.056
17	17 14 32.59	2.2468	28 5 14.2	2.917
18	17 16 47.43	2.2478	28 8 5.0	2.777
19	17 19 2.33	2.2487	28 10 47.5	2.638
20	17 21 17.28	2.2496	28 13 21.7	2.500
21	17 23 32.28	2.2504	28 15 47.5	2.361
22	17 25 47.33	2.2511	28 18 5.0	2.222
23	17 28 2.41	2.2517	28 20 14.1	2.082
24	17 30 17.53	2.2522	S.28 22 14.8	1.942

SATURDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 30 17.53	2.2522	S.28 22 14.8	1.942
1	17 32 32.68	2.2527	28 24 7.1	1.802
2	17 34 47.86	2.2532	28 25 51.0	1.662
3	17 37 3.07	2.2536	28 27 26.6	1.523
4	17 39 18.29	2.2538	28 28 53.8	1.383
5	17 41 33.52	2.2540	28 30 12.6	1.242
6	17 43 48.77	2.2542	28 31 22.9	1.102
7	17 46 4.02	2.2542	28 32 24.8	0.962
8	17 48 19.27	2.2541	28 33 18.4	0.822
9	17 50 34.51	2.2539	28 34 3.5	0.682
10	17 52 49.74	2.2537	28 34 40.2	0.542
11	17 55 4.96	2.2535	28 35 8.5	0.402
12	17 57 20.16	2.2532	28 35 28.5	0.263
13	17 59 35.34	2.2527	28 35 40.1	− 0.123
14	18 1 50.49	2.2522	28 35 43.2	+ 0.017
15	18 4 5.60	2.2515	28 35 38.0	0.157
16	18 6 20.67	2.2508	28 35 24.4	0.297
17	18 8 35.70	2.2501	28 35 2.4	0.436
18	18 10 50.68	2.2492	28 34 32.1	0.575
19	18 13 5.61	2.2483	28 33 53.4	0.714
20	18 15 20.48	2.2473	28 33 6.4	0.852
21	18 17 35.29	2.2462	28 32 11.1	0.991
22	18 19 50.03	2.2451	28 31 7.5	1.130
23	18 22 4.70	2.2438	S.28 29 55.5	1.269

SUNDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 24 19.29	2.2425	S.28 28 35.2	1.407
1	18 26 33.80	2.2412	28 27 6.7	1.544
2	18 28 48.23	2.2397	28 25 29.9	1.682
3	18 31 2.57	2.2382	28 23 44.9	1.819
4	18 33 16.81	2.2365	28 21 51.7	1.956
5	18 35 30.95	2.2348	28 19 50.2	2.093
6	18 37 44.99	2.2331	28 17 40.5	2.230
7	18 39 58.92	2.2312	28 15 22.6	2.366
8	18 42 12.74	2.2293	28 12 56.6	2.501
9	18 44 26.44	2.2273	28 10 22.5	2.636
10	18 46 40.02	2.2252	28 7 40.3	2.771
11	18 48 53.47	2.2231	28 4 50.0	2.906
12	18 51 6.79	2.2209	28 1 51.6	3.040
13	18 53 19.98	2.2187	27 58 45.2	3.174
14	18 55 33.03	2.2164	27 55 30.8	3.308
15	18 57 45.94	2.2140	27 52 8.3	3.441
16	18 59 58.71	2.2115	27 48 37.9	3.573
17	19 2 11.32	2.2089	27 44 59.6	3.704
18	19 4 23.78	2.2063	27 41 13.4	3.836
19	19 6 36.08	2.2037	27 37 19.3	3.967
20	19 8 48.22	2.2010	27 33 17.4	4.097
21	19 11 0.20	2.1982	27 29 7.6	4.227
22	19 13 12.01	2.1954	27 24 50.1	4.357
23	19 15 23.65	2.1925	27 20 24.8	4.486
24	19 17 35.11	2.1895	S.27 15 51.8	4.614

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 17 35.11	2.1895	S. 27 15 51.8	4.614
1	19 19 46.39	2.1865	27 11 11.1	4.742
2	19 21 57.49	2.1835	27 6 22.7	4.870
3	19 24 8.41	2.1804	27 1 26.7	4.997
4	19 26 19.14	2.1772	26 56 23.1	5.122
5	19 28 29.68	2.1740	26 51 12.0	5.247
6	19 30 40.02	2.1708	26 45 53.4	5.372
7	19 32 50.17	2.1675	26 40 27.3	5.497
8	19 35 0.12	2.1641	26 34 53.8	5.621
9	19 37 9.86	2.1607	26 29 12.8	5.744
10	19 39 19.40	2.1572	26 23 24.5	5.866
11	19 41 28.73	2.1537	26 17 28.9	5.988
12	19 43 37.85	2.1502	26 11 26.0	6.109
13	19 45 46.76	2.1467	26 5 15.8	6.229
14	19 47 55.45	2.1431	25 58 58.5	6.348
15	19 50 3.93	2.1395	25 52 34.0	6.467
16	19 52 12.19	2.1358	25 46 2.4	6.586
17	19 54 20.23	2.1321	25 39 23.7	6.704
18	19 56 28.04	2.1283	25 32 37.9	6.821
19	19 58 35.63	2.1246	25 25 45.2	6.937
20	20 0 42.99	2.1209	25 18 45.5	7.052
21	20 2 50.13	2.1171	25 11 38.9	7.167
22	20 4 57.04	2.1132	25 4 25.4	7.281
23	20 7 3.72	2.1093	S. 24 57 5.1	7.394

TUESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 9 10.16	2.1054	S. 24 49 38.1	7.507
1	20 11 16.37	2.1015	24 42 4.3	7.619
2	20 13 22.34	2.0976	24 34 23.8	7.730
3	20 15 28.08	2.0937	24 26 36.7	7.840
4	20 17 33.58	2.0897	24 18 43.0	7.949
5	20 19 38.84	2.0858	24 10 42.8	8.058
6	20 21 43.87	2.0818	24 2 36.1	8.166
7	20 23 48.66	2.0778	23 54 22.9	8.273
8	20 25 53.20	2.0737	23 46 3.3	8.379
9	20 27 57.50	2.0697	23 37 37.4	8.484
10	20 30 1.57	2.0657	23 29 5.2	8.589
11	20 32 5.39	2.0617	23 20 26.7	8.693
12	20 34 8.97	2.0577	23 11 42.0	8.797
13	20 36 12.31	2.0537	23 2 51.1	8.899
14	20 38 15.41	2.0496	22 53 54.1	9.000
15	20 40 18.26	2.0455	22 44 51.1	9.100
16	20 42 20.87	2.0415	22 35 42.1	9.200
17	20 44 23.24	2.0375	22 26 27.1	9.300
18	20 46 25.37	2.0335	22 17 6.1	9.398
19	20 48 27.26	2.0295	22 7 39.3	9.495
20	20 50 28.91	2.0254	21 58 6.7	9.592
21	20 52 30.31	2.0213	21 48 28.3	9.688
22	20 54 31.47	2.0173	21 38 44.2	9.782
23	20 56 32.39	2.0134	21 28 54.5	9.875
24	20 58 33.08	2.0095	S. 21 18 59.2	9.968

WEDNESDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 58 33.08	2.0095	S. 21 18 59.2	9.968
1	21 0 33.53	2.0055	21 8 58.3	10.061
2	21 2 33.74	2.0015	20 58 51.9	10.152
3	21 4 33.71	1.9976	20 48 40.0	10.243
4	21 6 33.45	1.9937	20 38 22.7	10.332
5	21 8 32.95	1.9898	20 28 0.1	10.421
6	21 10 32.22	1.9859	20 17 32.2	10.509
7	21 12 31.26	1.9821	20 6 59.0	10.597
8	21 14 30.07	1.9782	19 56 20.6	10.683
9	21 16 28.64	1.9744	19 45 37.1	10.768
10	21 18 26.99	1.9706	19 34 48.5	10.853
11	21 20 25.11	1.9668	19 23 54.8	10.937
12	21 22 23.01	1.9631	19 12 56.1	11.019
13	21 24 20.68	1.9594	19 1 52.5	11.101
14	21 26 18.13	1.9557	18 50 44.0	11.182
15	21 28 15.36	1.9520	18 39 30.6	11.262
16	21 30 12.37	1.9484	18 28 12.5	11.341
17	21 32 9.17	1.9448	18 16 49.7	11.420
18	21 34 5.75	1.9412	18 5 22.1	11.498
19	21 36 2.12	1.9377	17 53 49.9	11.574
20	21 37 58.28	1.9342	17 42 13.2	11.650
21	21 39 54.23	1.9307	17 30 31.9	11.726
22	21 41 49.97	1.9273	17 18 46.1	11.800
23	21 43 45.51	1.9239	S. 17 6 55.9	11.873

THURSDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 45 40.84	1.9205	S. 16 55 1.3	11.946
1	21 47 35.97	1.9172	16 43 2.4	12.017
2	21 49 30.91	1.9140	16 30 59.2	12.088
3	21 51 25.65	1.9108	16 18 51.8	12.158
4	21 53 20.20	1.9076	16 6 40.2	12.226
5	21 55 14.56	1.9044	15 54 24.6	12.294
6	21 57 8.73	1.9013	15 42 4.9	12.362
7	21 59 2.72	1.8982	15 29 41.2	12.428
8	22 0 56.52	1.8952	15 17 13.5	12.494
9	22 2 50.14	1.8922	15 4 41.9	12.559
10	22 4 43.58	1.8892	14 52 6.4	12.623
11	22 6 36.85	1.8864	14 39 27.1	12.686
12	22 8 29.95	1.8836	14 26 44.1	12.748
13	22 10 22.88	1.8808	14 13 57.4	12.809
14	22 12 15.65	1.8781	14 1 7.0	12.870
15	22 14 8.25	1.8753	13 48 13.0	12.930
16	22 16 0.69	1.8727	13 35 15.4	12.988
17	22 17 52.98	1.8702	13 22 14.4	13.046
18	22 19 45.11	1.8676	13 9 9.9	13.103
19	22 21 37.09	1.8651	12 56 2.0	13.159
20	22 23 28.92	1.8627	12 42 50.8	13.214
21	22 25 20.61	1.8603	12 29 36.3	13.269
22	22 27 12.16	1.8580	12 16 18.5	13.322
23	22 29 3.57	1.8558	12 2 57.6	13.375
24	22 30 54.85	1.8536	S. 11 49 33.5	13.427

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 30 54.85	1.8536	S. 11 49 33.5	13.427
1	22 32 46.00	1.8514	11 36 6.3	13.478
2	22 34 37.02	1.8493	11 22 36.1	13.528
3	22 36 27.91	1.8472	11 9 2.9	13.578
4	22 38 18.68	1.8452	10 55 26.8	13.627
5	22 40 9.33	1.8432	10 41 47.7	13.675
6	22 41 59.87	1.8414	10 28 5.8	13.721
7	22 43 50.30	1.8396	10 14 21.2	13.767
8	22 45 40.62	1.8378	10 0 33.8	13.813
9	22 47 30.83	1.8361	9 46 43.7	13.858
10	22 49 20.95	1.8345	9 32 50.9	13.901
11	22 51 10.97	1.8329	9 18 55.6	13.943
12	22 53 0.90	1.8314	9 4 57.8	13.984
13	22 54 50.74	1.8300	8 50 57.5	14.026
14	22 56 40.50	1.8286	8 36 54.7	14.067
15	22 58 30.17	1.8273	8 22 49.5	14.106
16	23 0 19.77	1.8260	8 8 42.0	14.144
17	23 2 9.29	1.8248	7 54 32.3	14.181
18	23 3 58.74	1.8237	7 40 20.3	14.217
19	23 5 48.13	1.8226	7 26 6.2	14.253
20	23 7 37.45	1.8215	7 11 49.9	14.289
21	23 9 26.71	1.8206	6 57 31.5	14.323
22	23 11 15.92	1.8198	6 43 11.1	14.357
23	23 13 5.08	1.8190	S. 6 28 48.7	14.389

SATURDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 14 54.20	1.8183	S. 6 14 24.4	14.421
1	23 16 43.27	1.8176	5 59 58.2	14.452
2	23 18 32.31	1.8170	5 45 30.2	14.482
3	23 20 21.31	1.8164	5 31 0.4	14.511
4	23 22 10.28	1.8159	5 16 28.9	14.539
5	23 23 59.22	1.8155	5 1 55.7	14.567
6	23 25 48.14	1.8152	4 47 20.9	14.593
7	23 27 37.04	1.8149	4 32 44.5	14.619
8	23 29 25.93	1.8147	4 18 6.6	14.644
9	23 31 14.81	1.8146	4 3 27.2	14.668
10	23 33 3.68	1.8146	3 48 46.4	14.692
11	23 34 52.56	1.8147	3 34 4.2	14.714
12	23 36 41.44	1.8148	3 19 20.7	14.736
13	23 38 30.33	1.8149	3 4 35.9	14.757
14	23 40 19.23	1.8151	2 49 49.9	14.776
15	23 42 8.14	1.8154	2 35 2.8	14.794
16	23 43 57.07	1.8157	2 20 14.6	14.813
17	23 45 46.03	1.8162	2 5 25.3	14.831
18	23 47 35.02	1.8167	1 50 34.9	14.848
19	23 49 24.04	1.8174	1 35 43.6	14.863
20	23 51 13.10	1.8181	1 20 51.4	14.877
21	23 53 2.21	1.8188	1 5 58.4	14.890
22	23 54 51.36	1.8196	0 51 4.6	14.903
23	23 56 40.56	1.8205	0 36 10.0	14.916
24	23 58 29.82	1.8215	S. 0 21 14.7	14.927

SUNDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 58 29.82	1.8215	S. 0 21 14.7	14.927
1	0 0 19.14	1.8226	S. 0 6 18.8	14.937
2	0 2 8.53	1.8237	N. 0 8 37.7	14.946
3	0 3 57.98	1.8249	0 23 34.7	14.954
4	0 5 47.51	1.8262	0 38 32.2	14.962
5	0 7 37.12	1.8275	0 53 30.2	14.969
6	0 9 26.81	1.8289	1 8 28.5	14.974
7	0 11 16.59	1.8304	1 23 27.1	14.979
8	0 13 6.46	1.8320	1 38 26.0	14.984
9	0 14 56.43	1.8337	1 53 25.2	14.987
10	0 16 46.51	1.8355	2 8 24.5	14.988
11	0 18 36.69	1.8373	2 23 23.8	14.989
12	0 20 26.98	1.8391	2 38 23.2	14.990
13	0 22 17.38	1.8411	2 53 22.6	14.989
14	0 24 7.91	1.8432	3 8 21.9	14.988
15	0 25 58.57	1.8454	3 23 21.1	14.986
16	0 27 49.36	1.8476	3 38 20.2	14.982
17	0 29 40.28	1.8498	3 53 19.0	14.977
18	0 31 31.34	1.8522	4 8 17.5	14.972
19	0 33 22.55	1.8547	4 23 15.6	14.966
20	0 35 13.91	1.8572	4 38 13.4	14.959
21	0 37 5.42	1.8599	4 53 10.7	14.951
22	0 38 57.09	1.8626	5 8 7.5	14.942
23	0 40 48.93	1.8653	N. 5 23 3.7	14.931

MONDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 42 40.93	1.8682	N. 5 37 59.2	14.919
1	0 44 33.11	1.8712	5 52 54.0	14.907
2	0 46 25.47	1.8742	6 7 48.1	14.895
3	0 48 18.01	1.8773	6 22 41.4	14.881
4	0 50 10.74	1.8805	6 37 33.8	14.866
5	0 52 3.67	1.8838	6 52 25.3	14.849
6	0 53 56.80	1.8872	7 7 15.7	14.832
7	0 55 50.13	1.8906	7 22 5.1	14.814
8	0 57 43.67	1.8941	7 36 53.4	14.794
9	0 59 37.42	1.8977	7 51 40.4	14.773
10	1 1 31.39	1.9014	8 6 26.2	14.752
11	1 3 25.59	1.9052	8 21 10.7	14.730
12	1 5 20.02	1.9091	8 35 53.8	14.706
13	1 7 14.68	1.9130	8 50 35.4	14.682
14	1 9 9.58	1.9170	9 5 15.6	14.656
15	1 11 4.72	1.9211	9 19 54.2	14.629
16	1 13 0.11	1.9253	9 34 31.1	14.602
17	1 14 55.76	1.9296	9 49 6.4	14.573
18	1 16 51.66	1.9339	10 3 39.9	14.543
19	1 18 47.83	1.9384	10 18 11.5	14.512
20	1 20 44.27	1.9429	10 32 41.3	14.480
21	1 22 40.98	1.9475	10 47 9.1	14.446
22	1 24 37.97	1.9522	11 1 34.8	14.411
23	1 26 35.25	1.9571	11 15 58.4	14.375
24	1 28 32.82	1.9620	N. 11 30 19.8	14.338

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 28 32.82	1.9620	N.11 30 19.8	14.338
1	1 30 30.69	1.9669	11 44 39.0	14.300
2	1 32 28.85	1.9718	11 58 55.8	14.260
3	1 34 27.31	1.9769	12 13 10.2	14.220
4	1 36 26.08	1.9821	12 27 22.2	14.178
5	1 38 25.17	1.9874	12 41 31.6	14.135
6	1 40 24.57	1.9927	12 55 38.4	14.091
7	1 42 24.30	1.9982	13 9 42.5	14.045
8	1 44 24.36	2.0037	13 23 43.8	13.998
9	1 46 24.75	2.0093	13 37 42.3	13.951
10	1 48 25.48	2.0150	13 51 37.9	13.902
11	1 50 26.55	2.0208	14 5 30.5	13.851
12	1 52 27.97	2.0267	14 19 20.0	13.799
13	1 54 29.75	2.0326	14 33 6.4	13.746
14	1 56 31.88	2.0385	14 46 49.5	13.691
15	1 58 34.37	2.0446	15 0 29.3	13.635
16	2 0 37.23	2.0508	15 14 5.7	13.578
17	2 2 40.47	2.0571	15 27 38.7	13.520
18	2 4 44.08	2.0633	15 41 8.1	13.460
19	2 6 48.07	2.0697	15 54 33.9	13.399
20	2 8 52.45	2.0762	16 7 56.0	13.336
21	2 10 57.22	2.0827	16 21 14.2	13.271
22	2 13 2.38	2.0893	16 34 28.5	13.206
23	2 15 7.94	2.0960	N.16 47 38.9	13.139

WEDNESDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 17 13.90	2.1027	N.17 0 45.2	13.071
1	2 19 20.27	2.1096	17 13 47.4	13.001
2	2 21 27.05	2.1165	17 26 45.3	12.929
3	2 23 34.25	2.1235	17 39 38.9	12.857
4	2 25 41.87	2.1305	17 52 28.1	12.783
5	2 27 49.91	2.1376	18 5 12.8	12.708
6	2 29 58.38	2.1448	18 17 53.0	12.631
7	2 32 7.28	2.1520	18 30 28.5	12.552
8	2 34 16.62	2.1593	18 42 59.2	12.471
9	2 36 26.40	2.1667	18 55 25.0	12.388
10	2 38 36.62	2.1740	19 7 45.8	12.305
11	2 40 47.28	2.1814	19 20 1.6	12.221
12	2 42 58.39	2.1890	19 32 12.3	12.134
13	2 45 9.96	2.1967	19 44 17.7	12.046
14	2 47 21.99	2.2043	19 56 17.8	11.957
15	2 49 34.48	2.2120	20 8 12.5	11.866
16	2 51 47.43	2.2197	20 20 1.7	11.773
17	2 54 0.84	2.2274	20 31 45.2	11.678
18	2 56 14.72	2.2353	20 43 23.0	11.582
19	2 58 29.08	2.2432	20 54 55.0	11.484
20	3 0 43.91	2.2512	21 6 21.1	11.385
21	3 2 59.22	2.2592	21 17 41.2	11.284
22	3 5 15.01	2.2672	21 28 55.2	11.181
23	3 7 31.28	2.2752	21 40 2.9	11.076
24	3 9 48.03	2.2833	N.21 51 4.3	10.970

THURSDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 9 48.03	2.2833	N.21 51 4.3	10.970
1	3 12 5.27	2.2914	22 1 59.3	10.862
2	3 14 23.00	2.2996	22 12 47.8	10.752
3	3 16 41.22	2.3077	22 23 29.6	10.641
4	3 18 59.93	2.3159	22 34 4.7	10.528
5	3 21 19.13	2.3241	22 44 33.0	10.414
6	3 23 38.82	2.3323	22 54 54.4	10.297
7	3 25 59.01	2.3406	23 5 8.7	10.179
8	3 28 19.69	2.3489	23 15 15.9	10.059
9	3 30 40.87	2.3572	23 25 15.8	9.937
10	3 33 2.55	2.3654	23 35 8.4	9.814
11	3 35 24.72	2.3737	23 44 53.5	9.688
12	3 37 47.39	2.3820	23 54 31.0	9.562
13	3 40 10.56	2.3903	24 4 0.9	9.433
14	3 42 34.23	2.3986	24 13 23.0	9.302
15	3 44 58.39	2.4068	24 22 37.2	9.170
16	3 47 23.05	2.4151	24 31 43.4	9.036
17	3 49 48.20	2.4233	24 40 41.5	8.900
18	3 52 13.85	2.4316	24 49 31.4	8.762
19	3 54 39.99	2.4398	24 58 13.0	8.623
20	3 57 6.62	2.4480	25 6 46.2	8.482
21	3 59 33.75	2.4562	25 15 10.8	8.338
22	4 2 1.37	2.4643	25 23 26.8	8.194
23	4 4 29.47	2.4724	N.25 31 34.1	8.048

FRIDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 6 58.06	2.4805	N.25 39 32.6	7.900
1	4 9 27.13	2.4885	25 47 22.1	7.750
2	4 11 56.68	2.4964	25 55 2.6	7.598
3	4 14 26.70	2.5043	26 2 33.9	7.445
4	4 16 57.20	2.5122	26 9 56.0	7.290
5	4 19 28.16	2.5199	26 17 8.7	7.133
6	4 21 59.59	2.5276	26 24 11.9	6.974
7	4 24 31.48	2.5353	26 31 5.6	6.814
8	4 27 3.83	2.5429	26 37 49.6	6.652
9	4 29 36.63	2.5504	26 44 23.9	6.489
10	4 32 9.88	2.5579	26 50 48.3	6.323
11	4 34 43.58	2.5653	26 57 2.7	6.157
12	4 37 17.72	2.5726	27 3 7.1	5.988
13	4 39 52.29	2.5797	27 9 1.3	5.817
14	4 42 27.29	2.5868	27 14 45.2	5.646
15	4 45 2.71	2.5937	27 20 18.8	5.473
16	4 47 38.54	2.6006	27 25 42.0	5.298
17	4 50 14.78	2.6074	27 30 54.6	5.122
18	4 52 51.43	2.6141	27 35 56.6	4.944
19	4 55 28.47	2.6206	27 40 47.9	4.765
20	4 58 5.90	2.6270	27 45 28.4	4.583
21	5 0 43.71	2.6333	27 49 57.9	4.400
22	5 3 21.90	2.6395	27 54 16.4	4.217
23	5 6 0.45	2.6455	27 58 23.9	4.032
24	5 8 39.36	2.6514	N.28 2 20.3	3.846

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY 25.					**MONDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	5 8 39.36	2.6514	N.28 2 20.3	3.846	0	7 19 27.23	2.7255	N 27 15 27.5	5.925
1	5 11 18.62	2.6572	28 6 5.4	3.658	1	7 22 10.67	2.7224	27 9 25.9	6.127
2	5 13 58.22	2.6628	28 9 39.2	3.469	2	7 24 53.92	2.7191	27 3 12.2	6.327
3	5 16 38.15	2.6682	28 13 1.7	3.279	3	7 27 36.96	2.7156	26 56 46.6	6.527
4	5 19 18.40	2.6735	28 16 12.7	3.087	4	7 30 19.79	2.7120	26 50 9.0	6.726
5	5 21 58.97	2.6787	28 19 12.2	2.895	5	7 33 2.40	2.7082	26 43 19.5	6.924
6	5 24 39.84	2.6837	28 22 0.1	2.701	6	7 35 44.78	2.7043	26 36 18.1	7.121
7	5 27 21.01	2.6885	28 24 36.3	2.506	7	7 38 26.92	2.7002	26 29 5.0	7.316
8	5 30 2.46	2.6932	28 27 0.8	2.310	8	7 41 8.81	2.6961	26 21 40.2	7.510
9	5 32 44.19	2.6977	28 29 13.5	2.112	9	7 43 50.45	2.6918	26 14 3.8	7.703
10	5 35 26.19	2.7021	28 31 14.3	1.914	10	7 46 31.82	2.6872	26 6 15.8	7.896
11	5 38 8.44	2.7062	28 33 3.2	1.716	11	7 49 12.91	2.6825	25 58 16.3	8.086
12	5 40 50.94	2.7102	28 34 40.2	1.516	12	7 51 53.72	2.6777	25 50 5.5	8.274
13	5 43 33.67	2.7141	28 36 5.1	1.314	13	7 54 34.24	2.6728	25 41 43.4	8.462
14	5 46 16.63	2.7178	28 37 17.9	1.112	14	7 57 14.46	2.6677	25 33 10.0	8.650
15	5 48 59.80	2.7212	28 38 18.6	0.910	15	7 59 54.37	2.6626	25 24 25.4	8.835
16	5 51 43.17	2.7244	28 39 7.1	0.706	16	8 2 33.97	2.6573	25 15 29.8	9.018
17	5 54 26.73	2.7274	28 39 43.3	0.502	17	8 5 13.25	2.6520	25 6 23.3	9.199
18	5 57 10.46	2.7302	28 40 7.3	0.297	18	8 7 52.21	2.6465	24 57 5.9	9.380
19	5 59 54.36	2.7330	28 40 19.0	+ 0.092	19	8 10 30.83	2.6409	24 47 37.7	9.559
20	6 2 38.42	2.7356	28 40 18.3	− 0.115	20	8 13 9.11	2.6352	24 37 58.8	9.736
21	6 5 22.63	2.7379	28 40 5.2	0.322	21	8 15 47.05	2.6293	24 28 9.4	9.911
22	6 8 6.97	2.7400	28 39 39.7	0.529	22	8 18 24.63	2.6234	24 18 9.5	10.085
23	6 10 51.43	2.7419	N.28 39 1.7	0.736	23	8 21 1.85	2.6174	N.24 7 59.2	10.257
	SUNDAY 26.					**TUESDAY 28.**			
0	6 13 36.00	2.7437	N.28 38 11.3	0.944	0	8 23 38.72	2.6114	N.23 57 38.6	10.426
1	6 16 20.67	2.7452	28 37 8.4	1.153	1	8 26 15.22	2.6052	23 47 7.8	10.597
2	6 19 5.42	2.7464	28 35 53.0	1.362	2	8 28 51.34	2.5988	23 36 27.0	10.763
3	6 21 50.24	2.7475	28 34 25.0	1.571	3	8 31 27.08	2.5925	23 25 36.3	10.927
4	6 24 35.12	2.7484	28 32 44.5	1.779	4	8 34 2.44	2.5862	23 14 35.8	11.090
5	6 27 20.05	2.7492	28 30 51.5	1.988	5	8 36 37.42	2.5797	23 3 25.5	11.252
6	6 30 5.02	2.7497	28 28 46.0	2.197	6	8 39 12.01	2.5732	22 52 5.5	11.412
7	6 32 50.01	2.7500	28 26 27.9	2.407	7	8 41 46.20	2.5666	22 40 36.1	11.569
8	6 35 35.02	2.7502	28 23 57.2	2.617	8	8 44 20.00	2.5600	22 28 57.3	11.724
9	6 38 20.03	2.7501	28 21 13.9	2.827	9	8 46 53.40	2.5533	22 17 9.2	11.877
10	6 41 5.03	2.7498	28 18 18.0	3.036	10	8 49 26.40	2.5466	22 5 12.0	12.028
11	6 43 50.00	2.7493	28 15 9.6	3.244	11	8 51 58.99	2.5399	21 53 5.8	12.178
12	6 46 34.94	2.7486	28 11 48.7	3.453	12	8 54 31.18	2.5331	21 40 50.6	12.326
13	6 49 19.83	2.7477	28 8 15.2	3.662	13	8 57 2.96	2.5262	21 28 26.7	12.471
14	6 52 4.66	2.7466	28 4 29.2	3.870	14	8 59 34.33	2.5193	21 15 54.1	12.614
15	6 54 49.42	2.7453	28 0 30.8	4.078	15	9 2 5.28	2.5124	21 3 13.0	12.755
16	6 57 34.10	2.7439	27 56 19.9	4.285	16	9 4 35.82	2.5055	20 50 23.5	12.894
17	7 0 18.69	2.7422	27 51 56.6	4.493	17	9 7 5.94	2.4986	20 37 25.7	13.031
18	7 3 3.17	2.7403	27 47 20.8	4.700	18	9 9 35.65	2.4917	20 24 19.8	13.166
19	7 5 47.53	2.7383	27 42 32.6	4.906	19	9 12 4.94	2.4847	20 11 5.8	13.299
20	7 8 31.77	2.7362	27 37 32.1	5.111	20	9 14 33.81	2.4777	19 57 43.9	13.429
21	7 11 15.87	2.7338	27 32 19.3	5.316	21	9 17 2.26	2.4707	19 44 14.3	13.558
22	7 13 59.82	2.7312	27 26 54.2	5.520	22	9 19 30.30	2.4638	19 30 37.0	13.684
23	7 16 43.61	2.7284	27 21 16.9	5.723	23	9 21 57.92	2.4568	19 16 52.2	13.808
24	7 19 27.23	2.7255	N.27 15 27.5	5.925	24	9 24 25.12	2.4498	N.19 3 0.1	13.929

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 24 25.12	2.4498	N.19 3 0.1	13.929
1	9 26 51.90	2.4429	18 49 0.7	14.050
2	9 29 18.27	2.4360	18 34 54.1	14.168
3	9 31 44.22	2.4290	18 20 40.6	14.282
4	9 34 9.75	2.4221	18 6 20.3	14.395
5	9 36 34.87	2.4152	17 51 53.2	14.506
6	9 38 59.58	2.4083	17 37 19.5	14.615
7	9 41 23.87	2.4015	17 22 39.4	14.721
8	9 43 47.76	2.3947	17 7 53.0	14.826
9	9 46 11.24	2.3879	16 53 0.3	14.928
10	9 48 34.31	2.3812	16 38 1.6	15.028
11	9 50 56.98	2.3745	16 22 57.0	15.126
12	9 53 19.25	2.3678	16 7 46.5	15.221
13	9 55 41.12	2.3612	15 52 30.4	15.314
14	9 58 2.59	2.3545	15 37 8.8	15.405
15	10 0 23.66	2.3479	15 21 41.8	15.494
16	10 2 44.34	2.3415	15 6 9.5	15.581
17	10 5 4.64	2.3351	14 50 32.1	15.665
18	10 7 24.55	2.3287	14 34 49.7	15.747
19	10 9 44.08	2.3223	14 19 2.4	15.827
20	10 12 3.23	2.3160	14 3 10.4	15.905
21	10 14 22.00	2.3098	13 47 13.8	15.981
22	10 16 40.40	2.3036	13 31 12.7	16.054
23	10 18 58.43	2.2974	N.13 15 7.3	16.125

THURSDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 21 16.09	2.2913	N.12 58 57.7	16.194
1	10 23 33.39	2.2854	12 42 44.0	16.262
2	10 25 50.34	2.2795	12 26 26.3	16.327
3	10 28 6.93	2.2736	12 10 4.8	16.389
4	10 30 23.17	2.2678	11 53 39.6	16.449
5	10 32 39.07	2.2621	11 37 10.9	16.507
6	10 34 54.63	2.2565	11 20 38.7	16.564
7	10 37 9.85	2.2509	11 4 3.2	16.618
8	10 39 24.74	2.2453	10 47 24.5	16.671
9	10 41 39.29	2.2399	10 30 42.7	16.721
10	10 43 53.52	2.2346	10 13 58.0	16.768
11	10 46 7.44	2.2293	9 57 10.5	16.814
12	10 48 21.04	2.2241	9 40 20.3	16.858
13	10 50 34.33	2.2189	9 23 27.5	16.900
14	10 52 47.31	2.2138	9 6 32.3	16.939
15	10 54 59.99	2.2088	8 49 34.8	16.977
16	10 57 12.37	2.2040	8 32 35.1	17.013
17	10 59 24.47	2.1992	8 15 33.3	17.047
18	11 1 36.28	2.1944	7 58 29.5	17.078
19	11 3 47.80	2.1897	7 41 23.9	17.108
20	11 5 59.05	2.1852	7 24 16.6	17.136
21	11 8 10.03	2.1807	7 7 7.6	17.162
22	11 10 20.74	2.1763	6 49 57.1	17.186
23	11 12 31.18	2.1719	6 32 45.3	17.208
24	11 14 41.37	2.1677	N. 6 15 32.2	17.228

FRIDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 14 41.37	2.1677	N. 6 15 32.2	17.228
1	11 16 51.31	2.1636	5 58 18.0	17.246
2	11 19 1.00	2.1594	5 41 2.7	17.262
3	11 21 10.44	2.1554	5 23 46.5	17.277
4	11 23 19.65	2.1516	5 6 29.5	17.289
5	11 25 28.63	2.1478	4 49 11.8	17.299
6	11 27 37.38	2.1440	4 31 53.6	17.307
7	11 29 45.91	2.1403	4 14 34.9	17.315
8	11 31 54.22	2.1368	3 57 15.8	17.321
9	11 34 2.33	2.1334	3 39 56.4	17.324
10	11 36 10.23	2.1299	3 22 36.9	17.325
11	11 38 17.92	2.1266	3 5 17.4	17.325
12	11 40 25.42	2.1234	2 47 57.9	17.323
13	11 42 32.73	2.1203	2 30 38.6	17.319
14	11 44 39.86	2.1172	2 13 19.6	17.314
15	11 46 46.80	2.1142	1 56 0.9	17.307
16	11 48 53.57	2.1114	1 38 42.7	17.298
17	11 51 0.17	2.1086	1 21 25.1	17.288
18	11 53 6.60	2.1058	1 4 8.1	17.277
19	11 55 12.87	2.1032	0 46 51.9	17.263
20	11 57 18.99	2.1007	0 29 36.6	17.247
21	11 59 24.96	2.0983	N. 0 12 22.3	17.229
22	12 1 30.79	2.0960	S. 0 4 50.9	17.211
23	12 3 36.48	2.0937	S. 0 22 3.0	17.191

SATURDAY, SEPTEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 5 42.03	2.0914	S. 0 39 13.8	17.168

PHASES OF THE MOON.

		d	h	m
● New Moon	Aug.	1	0	24.1
☽ First Quarter		7	22	5.2
○ Full Moon		16	1	17.0
☾ Last Quarter		23	17	39.7
● New Moon		30	8	4.5

		d	h
☾ Apogee	Aug.	13	7.5
☾ Perigee		28	18.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
2	**Sun**	W.	14° 17′ 18″	2489	15° 58′ 47″	2468	17° 40′ 45″	2456	19° 23′ 0″	2450
	Saturn	E.	55 42 43	2070	53 50 58	2081	51 59 29	2092	50 8 17	2104
	Antares	E.	104 24 59	2036	102 32 21	2045	100 39 57	2055	98 47 49	2066
3	**Sun**	W.	27 54 37	2472	29 36 30	2482	31 18 9	2494	32 59 31	2507
	Saturn	E.	40 57 17	2176	39 8 13	2192	37 19 33	2209	35 31 19	2227
	Antares	E.	89 31 42	2130	87 41 29	2145	85 51 38	2159	84 2 9	2175
4	**Sun**	W.	41 21 28	2583	43 0 46	2601	44 39 40	2618	46 18 10	2636
	Antares	E.	75 0 44	2258	73 13 42	2274	71 27 5	2292	69 40 54	2310
5	**Sun**	W.	54 24 28	2731	56 0 27	2750	57 36 0	2769	59 11 8	2789
	Antares	E.	60 56 36	2402	59 13 4	2421	57 29 59	2440	55 47 21	2458
	α Aquilæ	E.	110 3 50	3331	108 40 14	3331	107 16 38	3332	105 53 4	3336
6	**Sun**	W.	67 0 23	2887	68 32 58	2906	70 5 9	2926	71 36 55	2946
	Antares	E.	47 20 43	2551	45 40 41	2570	44 1 5	2588	42 21 53	2606
	α Aquilæ	E.	98 56 53	3377	97 34 10	3388	96 11 40	3402	94 49 26	3415
7	**Sun**	W.	79 9 47	3038	80 39 13	3056	82 8 17	3073	83 37 0	3090
	Antares	E.	34 11 55	2692	32 35 4	2709	30 58 36	2725	29 22 30	2741
	α Aquilæ	E.	88 2 31	3499	86 42 6	3519	85 22 3	3539	84 2 22	3560
8	**Sun**	W.	90 55 28	3171	92 22 12	3186	93 48 38	3201	95 14 46	3215
	Saturn	W.	27 11 58	2890	28 44 30	2899	30 16 50	2909	31 48 57	2920
	Spica	W.	24 27 25	2817	26 1 31	2831	27 35 19	2845	29 8 49	2857
	α Aquilæ	E.	77 29 54	3676	76 12 41	3701	74 55 55	3727	73 39 37	3755
	Fomalhaut	E.	103 8 7	3059	101 39 7	3069	100 10 20	3081	98 41 47	3092
9	**Sun**	W.	102 21 23	3281	103 45 57	3292	105 10 18	3304	106 34 25	3315
	Saturn	W.	39 26 21	2969	40 57 12	2978	42 27 52	2988	43 58 20	2997
	Spica	W.	36 52 17	2918	38 24 13	2928	39 55 56	2939	41 27 25	2949
	α Aquilæ	E.	67 25 39	3910	66 12 29	3943	64 59 53	3980	63 47 54	4018
	Fomalhaut	E.	91 22 28	3148	89 55 16	3159	88 28 18	3170	87 1 33	3180
10	**Sun**	W.	113 32 0	3364	114 54 58	3372	116 17 47	3379	117 40 27	3387
	Saturn	W.	51 27 57	3038	52 57 23	3044	54 26 41	3052	55 55 50	3057
	Spica	W.	49 1 53	2993	50 32 14	3001	52 2 26	3008	53 32 29	3015
	α Aquilæ	E.	57 57 52	4238	56 50 2	4291	55 43 1	4345	54 36 50	4402
	Fomalhaut	E.	79 50 55	3932	78 25 24	3943	77 0 6	3953	75 34 59	3964
	α Pegasi	E.	101 35 0	3281	100 10 26	3286	98 45 58	3291	97 21 36	3295
11	**Sun**	W.	124 31 45	3419	125 53 40	3424	127 15 29	3430	128 37 12	3434
	Saturn	W.	63 19 48	3084	64 48 17	3089	66 16 40	3092	67 44 59	3096
	Spica	W.	61 0 45	3043	62 30 4	3047	63 59 18	3052	65 28 26	3056
	α Aquilæ	E.	49 20 3	4760	48 19 54	4848	47 20 57	4943	46 23 17	5045
	Fomalhaut	E.	68 32 26	3314	67 8 31	3325	65 44 49	3336	64 21 19	3346
	α Pegasi	E.	90 21 9	3319	88 57 20	3325	87 33 37	3329	86 9 59	3334
12	**Saturn**	W.	75 5 34	3110	76 33 32	3111	78 1 28	3112	79 29 23	3114
	Spica	W.	72 53 8	3069	74 21 56	3071	75 50 41	3073	77 19 24	3073
	Antares	W.	26 58 43	3069	28 27 30	3071	29 56 15	3073	31 24 58	3073

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
2	**Sun**	W.	21° 5′ 24″	2448	22° 47′ 50″	2450	24° 30′ 14″	2455	26° 12′ 31″	2462
	Saturn	E.	48 17 24	2116	46 26 50	2130	44 36 37	2144	42 46 45	2160
	Antares	E.	96 55 58	2078	95 4 25	2090	93 13 11	2103	91 22 16	2116
3	**Sun**	W.	34 40 35	2520	36 21 20	2535	38 1 44	2551	39 41 47	2566
	Saturn	E.	33 43 32	2247	31 56 14	2266	30 9 25	2287	28 23 7	2310
	Antares	E.	82 13 4	2190	80 24 22	2207	78 36 5	2223	76 48 12	2240
4	**Sun**	W.	47 56 16	2655	49 33 57	2673	51 11 13	2692	52 48 3	2711
	Antares	E.	67 55 9	2328	66 9 51	2346	64 24 59	2365	62 40 34	2384
5	**Sun**	W.	60 45 50	2809	62 20 6	2828	63 53 57	2848	65 27 23	2868
	Antares	E.	54 5 9	2477	52 23 23	2496	50 42 4	2515	49 1 11	2533
	α Aquilæ	E.	104 29 34	3342	103 6 11	3348	101 42 55	3357	100 19 49	3365
6	**Sun**	W.	73 8 16	2964	74 39 14	2983	76 9 48	3001	77 39 59	3020
	Antares	E.	40 43 6	2624	39 4 43	2641	37 26 44	2658	35 49 8	2675
	α Aquilæ	E.	93 27 27	3431	92 5 45	3446	90 44 21	3463	89 23 16	3481
7	**Sun**	W.	85 5 22	3107	86 33 23	3124	88 1 4	3140	89 28 25	3155
	Antares	E.	27 46 45	2757	26 11 21	2772	24 36 17	2788	23 1 33	2802
	α Aquilæ	E.	82 43 4	3581	81 24 9	3604	80 5 39	3627	78 47 34	3650
8	**Sun**	W.	96 40 37	3229	98 6 12	3242	99 31 31	3256	100 56 34	3268
	Saturn	W.	33 20 51	2930	34 52 32	2939	36 24 1	2950	37 55 17	2959
	Spica	W.	30 42 3	2870	32 15 0	2883	33 47 41	2895	35 20 6	2906
	α Aquilæ	E.	72 23 48	3784	71 8 29	3813	69 53 40	3844	68 39 23	3876
	Fomalhaut	E.	97 13 28	3104	95 45 23	3114	94 17 31	3126	92 49 53	3137
9	**Sun**	W.	107 58 19	3325	109 22 1	3335	110 45 32	3345	112 8 51	3354
	Saturn	W.	45 28 36	3005	46 58 42	3015	48 28 36	3022	49 58 21	3030
	Spica	W.	42 58 42	2958	44 29 47	2968	46 0 40	2977	47 31 22	2985
	α Aquilæ	E.	62 36 32	4058	61 25 49	4100	60 15 47	4143	59 6 27	4191
	Fomalhaut	E.	85 35 0	3191	84 8 40	3202	82 42 33	3212	81 16 38	3222
10	**Sun**	W.	119 2 58	3394	120 25 21	3401	121 47 36	3408	123 9 44	3414
	Saturn	W.	57 24 52	3064	58 53 46	3069	60 22 33	3074	61 51 14	3080
	Spica	W.	55 2 23	3022	56 32 9	3027	58 1 48	3033	59 31 20	3039
	α Aquilæ	E.	53 31 31	4465	52 27 8	4532	51 23 44	4602	50 21 21	4678
	Fomalhaut	E.	74 10 5	3274	72 45 23	3283	71 20 52	3294	69 56 33	3304
	α Pegasi	E.	95 57 19	3300	94 33 8	3306	93 9 3	3310	91 45 3	3315
11	**Sun**	W.	129 58 50	3438	131 20 23	3442	132 41 52	3446	134 3 17	3448
	Saturn	W.	69 13 13	3100	70 41 23	3102	72 9 30	3105	73 37 33	3107
	Spica	W.	66 57 30	3060	68 26 29	3062	69 55 25	3065	71 24 18	3067
	α Aquilæ	E.	45 26 57	5157	44 32 3	5279	43 38 40	5411	42 46 53	5554
	Fomalhaut	E.	62 58 1	3358	61 34 56	3370	60 12 5	3382	58 49 28	3394
	α Pegasi	E.	84 46 27	3338	83 23 0	3344	81 59 39	3348	80 36 23	3353
12	**Saturn**	W.	80 57 16	3114	82 25 8	3114	83 53 0	3115	85 20 51	3115
	Spica	W.	78 48 6	3074	80 16 47	3075	81 45 27	3075	83 14 7	3075
	Antares	W.	32 53 40	3074	34 22 21	3075	35 51 1	3075	37 19 41	3075

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
12	Fomalhaut	E.	57° 27′ 5″	3408	56° 4′ 57″	3421	54° 43′ 4″	3436	53° 21′ 28″	3451
	α Pegasi	E.	79 13 13	3358	77 50 8	3363	76 27 9	3368	75 4 16	3373
13	Saturn	W.	86 48 42	3114	88 16 34	3114	89 44 26	3114	91 12 19	3112
	Spica	W.	84 42 47	3075	86 11 27	3074	87 40 8	3073	89 8 50	3072
	Antares	W.	38 48 21	3074	40 17 2	3074	41 45 43	3073	43 14 25	3072
	Fomalhaut	E.	46 38 10	3546	45 18 37	3570	43 59 30	3596	42 40 53	3626
	α Pegasi	E.	68 11 22	3401	66 49 7	3408	65 27 0	3415	64 5 1	3423
	Mars	E.	100 11 33	3945	98 46 17	3944	97 21 0	3942	95 55 41	3942
14	Spica	W.	96 32 48	3064	98 1 42	3060	99 30 40	3058	100 59 41	3056
	Antares	W.	50 38 23	3064	52 7 17	3060	53 36 15	3058	55 5 16	3055
	α Pegasi	E.	57 17 28	3471	55 56 31	3482	54 35 47	3496	53 15 18	3510
	Mars	E.	88 48 36	3231	87 23 3	3227	85 57 26	3224	84 31 45	3221
	α Arietis	E.	97 45 11	3096	96 16 57	3094	94 48 40	3091	93 20 19	3088
15	Spica	W.	108 25 44	3039	109 55 9	3034	111 24 40	3030	112 54 16	3026
	Antares	W.	62 31 20	3038	64 0 46	3034	65 30 16	3030	66 59 52	3026
	α Pegasi	E.	46 37 25	3607	45 18 58	3633	44 0 59	3662	42 43 31	3695
	Mars	E.	77 22 23	3203	75 56 17	3199	74 30 7	3195	73 3 52	3190
	α Arietis	E.	85 57 38	3071	84 28 53	3067	83 0 3	3063	81 31 8	3059
16	Antares	W.	74 29 13	3002	75 59 23	2997	77 29 39	2992	79 0 2	2986
	Mars	E.	65 51 15	3168	64 24 27	3163	62 57 33	3158	61 30 33	3153
	α Arietis	E.	74 5 17	3038	72 35 51	3033	71 6 19	3028	69 36 41	3024
	Aldebaran	E.	104 55 43	3076	103 27 4	3070	101 58 18	3064	100 29 24	3058
17	Antares	W.	86 33 42	2958	88 4 48	2951	89 36 2	2946	91 7 23	2939
	α Aquilæ	W.	45 52 6	4901	46 50 20	4799	47 49 57	4703	48 50 54	4615
	Mars	E.	54 14 3	3128	52 46 27	3122	51 18 44	3118	49 50 56	3112
	α Arietis	E.	62 7 6	3000	60 36 53	2995	59 6 34	2990	57 36 9	2985
	Aldebaran	E.	93 3 4	3027	91 33 25	3022	90 3 39	3015	88 33 45	3009
18	Antares	W.	98 46 14	2905	100 18 26	2898	101 50 47	2891	103 23 17	2884
	α Aquilæ	W.	54 13 4	4261	55 20 33	4203	56 28 56	4150	57 38 10	4100
	Mars	E.	42 30 24	3089	41 2 1	3086	39 33 34	3081	38 5 1	3078
	α Arietis	E.	50 2 34	2962	48 31 34	2958	47 0 28	2954	45 29 17	2950
	Aldebaran	E.	81 2 17	2977	79 31 35	2971	78 0 46	2965	76 29 49	2958
	Jupiter	E.	102 37 38	2989	101 7 11	2981	99 36 35	2974	98 5 50	2966
19	α Aquilæ	W.	63 35 34	3892	64 49 2	3856	66 3 6	3824	67 17 43	3792
	Fomalhaut	W.	33 46 16	3672	35 3 33	3601	36 22 6	3537	37 41 49	3480
	α Arietis	E.	37 52 16	2935	36 20 42	2934	34 49 6	2934	33 17 30	2934
	Aldebaran	E.	68 53 4	2927	67 21 19	2920	65 49 26	2914	64 17 25	2909
	Jupiter	E.	90 29 36	2927	88 57 51	2918	87 25 55	2910	85 53 49	2901
20	α Aquilæ	W.	73 38 23	3661	74 55 52	3638	76 13 45	3617	77 32 1	3597
	Fomalhaut	W.	44 34 38	3260	45 59 36	3226	47 25 14	3193	48 51 31	3163
	Aldebaran	E.	56 35 27	2880	55 2 42	2874	53 29 50	2869	51 56 52	2864
	Jupiter	E.	78 10 31	2857	76 37 17	2848	75 3 51	2838	73 30 13	2828
	Pollux	E.	99 33 46	2779	97 58 50	2769	96 23 42	2760	94 48 21	2750
	Sun	E.	135 23 22	3131	133 55 50	3121	132 28 6	3110	131 0 9	3099

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
12	Fomalhaut	E.	52° 0′ 9″	3468	50° 39′ 9″	3485	49° 18′ 28″	3504	47° 58′ 8″	3524
	α Pegasi	E.	73 41 29	3379	72 18 48	3384	70 56 13	3389	69 33 44	3395
13	SATURN	W.	92 40 14	3111	94 8 10	3110	95 36 8	3108	97 4 8	3105
	Spica	W.	90 37 34	3070	92 6 20	3069	93 35 7	3068	95 3 56	3065
	Antares	W.	44 43 9	3070	46 11 55	3069	47 40 42	3068	49 9 31	3065
	Fomalhaut	E.	41 22 47	3659	40 5 16	3694	38 48 23	3734	37 32 12	3779
	α Pegasi	E.	62 43 11	3431	61 21 30	3439	59 59 58	3449	58 38 37	3460
	MARS	E.	94 30 21	3940	93 4 59	3937	91 39 34	3935	90 14 6	3933
14	Spica	W.	102 28 46	3052	103 57 55	3049	105 27 7	3046	106 56 23	3042
	Antares	W.	56 34 21	3052	58 3 29	3048	59 32 42	3045	61 1 59	3042
	α Pegasi	E.	51 55 5	3525	50 35 9	3544	49 15 33	3563	47 56 18	3583
	MARS	E.	83 6 1	3918	81 40 13	3914	80 14 21	3910	78 48 24	3907
	α Arietis	E.	91 51 55	3085	90 23 27	3082	88 54 55	3078	87 26 19	3074
15	Spica	W.	114 23 57	3021	115 53 44	3017	117 23 36	3012	118 53 34	3007
	Antares	W.	68 29 33	3022	69 59 19	3017	71 29 11	3012	72 59 9	3007
	α Pegasi	E.	41 26 39	3731	40 10 25	3773	38 54 55	3819	37 40 12	3869
	MARS	E.	71 37 31	3186	70 11 5	3182	68 44 34	3177	67 17 57	3173
	α Arietis	E.	80 2 8	3055	78 33 3	3051	77 3 53	3047	75 34 38	3042
16	Antares	W.	80 30 32	2981	82 1 9	2975	83 31 53	2969	85 2 44	2964
	MARS	E.	60 3 27	3148	58 36 15	3143	57 8 57	3138	55 41 33	3133
	α Arietis	E.	68 6 58	3019	66 37 9	3014	65 7 14	3009	63 37 13	3005
	Aldebaran	E.	99 0 23	3052	97 31 15	3046	96 1 59	3039	94 32 35	3034
17	Antares	W.	92 38 53	2932	94 10 31	2926	95 42 17	2920	97 14 11	2912
	α Aquilæ	W.	49 53 6	4533	50 56 29	4458	52 0 58	4387	53 6 31	4321
	MARS	E.	48 23 1	3107	46 55 0	3103	45 26 54	3098	43 58 42	3093
	α Arietis	E.	56 5 38	2981	54 35 1	2976	53 4 18	2971	51 33 29	2966
	Aldebaran	E.	87 3 43	3002	85 33 33	2997	84 3 16	2989	82 32 50	2984
18	Antares	W.	104 55 56	2876	106 28 45	2869	108 1 44	2861	109 34 53	2854
	α Aquilæ	W.	58 48 12	4052	59 59 0	4009	61 10 31	3967	62 22 43	3928
	MARS	E.	36 36 25	3075	35 7 45	3073	33 39 3	3072	32 10 19	3070
	α Arietis	E.	43 58 1	2946	42 26 41	2942	40 55 16	2940	39 23 48	2937
	Aldebaran	E.	74 58 44	2952	73 27 31	2946	71 56 10	2939	70 24 41	2933
	JUPITER	E.	96 34 55	2959	95 3 51	2950	93 32 36	2942	92 1 11	2935
19	α Aquilæ	W.	68 32 53	3764	69 48 33	3736	71 4 42	3709	72 21 19	3684
	Fomalhaut	W.	39 2 35	3429	40 24 19	3381	41 46 57	3338	43 10 24	3298
	α Arietis	E.	31 45 54	2936	30 14 21	2939	28 42 52	2945	27 11 30	2953
	Aldebaran	E.	62 45 17	2902	61 13 1	2896	59 40 37	2891	58 8 6	2884
	JUPITER	E.	84 21 32	2893	82 49 4	2883	81 16 24	2875	79 43 33	2866
20	α Aquilæ	W.	78 50 39	3577	80 9 38	3560	81 28 56	3543	82 48 33	3526
	Fomalhaut	W.	50 18 24	3134	51 45 52	3108	53 13 52	3082	54 42 23	3057
	Aldebaran	E.	50 23 47	2860	48 50 37	2856	47 17 22	2853	45 44 3	2850
	JUPITER	E.	71 56 22	2819	70 22 19	2810	68 48 4	2800	67 13 36	2790
	Pollux	E.	93 12 47	2740	91 37 0	2730	90 1 0	2720	88 24 47	2710
	SUN	E.	129 31 58	3087	128 3 33	3077	126 34 55	3065	125 6 3	3054

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
21	α Aquilæ	W.	84° 8′ 28″	3511	85° 28′ 40″	3497	86° 49′ 7″	3483	88° 9′ 50″	3471
	Fomalhaut	W.	56 11 25	3034	57 40 56	3012	59 10 54	2990	60 41 19	2969
	α Pegasi	W.	36 23 4	3560	37 42 22	3488	39 2 59	3424	40 24 48	3365
	Aldebaran	E.	44 10 40	2848	42 37 15	2847	41 3 48	2847	39 30 21	2848
	Jupiter	E.	65 38 55	2780	64 4 1	2769	62 28 53	2760	60 53 32	2749
	Pollux	E.	86 48 20	2699	85 11 39	2688	83 34 43	2678	81 57 33	2667
	Venus	E.	97 55 29	3138	96 28 6	3126	95 0 28	3114	93 32 36	3102
	Sun	E.	123 36 57	3042	122 7 36	3030	120 38 1	3018	119 8 11	3006
22	Fomalhaut	W.	68 19 45	2874	69 52 37	2856	71 25 52	2839	72 59 29	2823
	α Pegasi	W.	47 29 20	3130	48 56 53	3093	50 25 11	3058	51 54 12	3024
	Jupiter	E.	52 53 19	2696	51 16 34	2686	49 39 35	2676	48 2 22	2665
	Pollux	E.	73 47 59	2610	72 9 17	2598	70 30 19	2586	68 51 5	2574
	Venus	E.	86 9 26	3039	84 40 1	3025	83 10 19	3012	81 40 21	2999
	Sun	E.	111 35 11	2943	110 3 47	2931	108 32 7	2916	107 0 9	2904
23	Fomalhaut	W.	80 52 49	2744	82 28 30	2729	84 4 31	2715	85 40 51	2701
	α Pegasi	W.	59 29 0	2881	61 1 43	2857	62 34 57	2833	64 8 42	2809
	Mars	W.	21 7 42	2799	22 42 11	2762	24 17 29	2728	25 53 32	2698
	Jupiter	E.	39 52 48	2615	38 14 13	2606	36 35 26	2597	34 56 27	2588
	Pollux	E.	60 30 37	2511	58 49 39	2498	57 8 23	2485	55 26 49	2472
	Venus	E.	74 6 16	2929	72 34 34	2915	71 2 34	2901	69 30 16	2886
	Sun	E.	99 16 4	2835	97 42 22	2821	96 8 21	2807	94 34 2	2793
24	α Pegasi	W.	72 4 43	2706	73 41 15	2687	75 18 13	2669	76 55 35	2651
	Mars	W.	34 3 0	2576	35 42 28	2555	37 22 25	2535	39 2 49	2517
	α Arietis	W.	28 42 15	2538	30 22 35	2511	32 3 33	2486	33 45 6	2463
	Pollux	E.	46 54 21	2406	45 10 55	2393	43 27 10	2380	41 43 6	2367
	Venus	E.	61 44 8	2814	60 9 58	2800	58 35 30	2785	57 0 43	2771
	Sun	E.	86 37 47	2721	85 1 35	2707	83 25 4	2692	81 48 13	2678
25	α Pegasi	W.	85 8 5	2572	86 47 38	2559	88 27 30	2545	90 7 41	2533
	Mars	W.	47 31 10	2430	49 14 2	2414	50 57 17	2398	52 40 55	2383
	α Arietis	W.	42 20 22	2365	44 4 47	2348	45 49 37	2331	47 34 51	2315
	Venus	E.	49 2 5	2701	47 25 26	2687	45 48 29	2674	44 11 14	2661
	Sun	E.	73 39 9	2607	72 0 23	2592	70 21 17	2578	68 41 52	2565
26	Mars	W.	61 24 20	2312	63 10 2	2300	64 56 2	2287	66 42 21	2275
	α Arietis	W.	56 26 41	2242	58 14 6	2229	60 1 50	2216	61 49 53	2205
	Aldebaran	W.	26 51 46	2542	28 32 1	2493	30 13 24	2451	31 55 46	2413
	Venus	E.	36 0 46	2601	34 21 53	2591	32 42 46	2582	31 3 26	2573
	Sun	E.	60 20 16	2501	58 39 4	2489	56 57 35	2477	55 15 50	2466
27	Mars	W.	75 38 8	2221	77 26 4	2212	79 14 13	2204	81 2 35	2195
	α Arietis	W.	70 54 22	2152	72 44 2	2143	74 33 56	2134	76 24 3	2126
	Aldebaran	W.	40 39 14	2279	42 25 44	2260	44 12 43	2242	46 0 8	2227
	Sun	E.	46 43 17	2417	45 0 6	2408	43 16 42	2400	41 33 7	2392
28	Mars	W.	90 7 11	2164	91 56 33	2160	93 46 1	2156	95 35 35	2153
	α Arietis	W.	85 37 18	2096	87 28 23	2092	89 19 34	2089	91 10 50	2086
	Aldebaran	W.	55 2 24	2167	56 51 41	2159	58 41 10	2152	60 30 50	2146
	Sun	E.	32 52 51	2365	31 8 26	2362	29 23 57	2360	27 39 25	2359

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
21	α Aquilæ	W.	89° 30′ 46″	3460	90° 51′ 55″	3449	92° 13′ 16″	3439	93° 34′ 48″	3431
	Fomalhaut	W.	62 12 11	2949	63 43 28	2929	65 15 10	2910	66 47 16	2892
	α Pegasi	W.	41 47 45	3310	43 11 45	3260	44 36 43	3214	46 2 36	3171
	Aldebaran	E.	37 56 56	2851	36 23 34	2856	34 50 19	2863	33 17 13	2872
	Jupiter	E.	59 17 57	2738	57 42 8	2729	56 6 6	2718	54 29 50	2707
	Pollux	E.	80 20 9	2656	78 42 30	2644	77 4 35	2633	75 26 25	2621
	Venus	E.	92 4 29	3090	90 36 7	3077	89 7 29	3064	87 38 35	3052
	Sun	E.	117 38 6	2994	116 7 46	2981	114 37 10	2969	113 6 19	2956
22	Fomalhaut	W.	74 33 27	2806	76 7 47	2791	77 42 27	2775	79 17 28	2760
	α Pegasi	W.	53 23 55	2993	54 54 17	2963	56 25 16	2935	57 56 51	2908
	Jupiter	E.	46 24 55	2655	44 47 14	2644	43 9 19	2634	41 31 10	2624
	Pollux	E.	67 11 34	2561	65 31 46	2548	63 51 40	2536	62 11 17	2524
	Venus	E.	80 10 7	2985	78 39 35	2971	77 8 46	2958	75 37 40	2943
	Sun	E.	105 27 55	2891	103 55 24	2876	102 22 35	2862	100 49 28	2849
23	Fomalhaut	W.	87 17 30	2687	88 54 28	2673	90 31 44	2660	92 9 18	2647
	α Pegasi	W.	65 42 58	2787	67 17 43	2766	68 52 56	2745	70 28 36	2725
	Mars	W.	27 30 15	2669	29 7 36	2643	30 45 32	2619	32 24 1	2597
	Jupiter	E.	33 17 16	2581	31 37 55	2575	29 58 26	2570	28 18 50	2567
	Pollux	E.	53 44 56	2459	52 2 45	2446	50 20 16	2433	48 37 28	2419
	Venus	E.	67 57 39	2872	66 24 44	2858	64 51 31	2843	63 17 59	2828
	Sun	E.	92 59 25	2779	91 24 29	2764	89 49 14	2750	88 13 40	2735
24	α Pegasi	W.	78 33 21	2635	80 11 29	2618	81 50 0	2602	83 28 52	2587
	Mars	W.	40 43 39	2498	42 24 55	2480	44 6 36	2463	45 48 41	2446
	α Arietis	W.	35 27 11	2442	37 9 46	2421	38 52 51	2402	40 36 23	2383
	Pollux	E.	39 58 44	2353	38 14 2	2341	36 29 2	2328	34 43 43	2316
	Venus	E.	55 25 37	2756	53 50 12	2742	52 14 28	2729	50 38 26	2714
	Sun	E.	80 11 3	2663	78 33 34	2649	76 55 45	2635	75 17 37	2620
25	α Pegasi	W.	91 48 9	2520	93 28 54	2510	95 9 54	2499	96 51 9	2489
	Mars	W.	54 24 54	2368	56 9 15	2354	57 53 56	2339	59 38 58	2326
	α Arietis	W.	49 20 29	2300	51 6 29	2284	52 52 52	2270	54 39 36	2256
	Venus	E.	42 33 42	2648	40 55 52	2636	39 17 46	2624	37 39 24	2612
	Sun	E.	67 2 9	2551	65 22 7	2539	63 41 48	2526	62 1 11	2513
26	Mars	W.	68 28 57	2263	70 15 51	2252	72 3 1	2241	73 50 27	2231
	α Arietis	W.	63 38 13	2193	65 26 51	2182	67 15 46	2172	69 4 56	2161
	Aldebaran	W.	33 39 2	2380	35 23 5	2350	37 7 51	2324	38 53 15	2300
	Venus	E.	29 23 53	2564	27 44 9	2558	26 4 16	2551	24 24 14	2548
	Sun	E.	53 33 49	2455	51 51 32	2445	50 9 1	2435	48 26 16	2425
27	Mars	W.	82 51 10	2188	84 39 56	2181	86 28 52	2175	88 17 57	2169
	α Arietis	W.	78 14 22	2119	80 4 52	2113	81 55 32	2107	83 46 21	2101
	Aldebaran	W.	47 47 56	2212	49 36 6	2199	51 24 35	2187	53 13 22	2177
	Sun	E.	39 49 21	2386	38 5 26	2380	36 21 22	2374	34 37 10	2369
28	Mars	W.	97 25 13	2151	99 14 55	2149	101 4 39	2149	102 54 24	2148
	α Arietis	W.	93 2 10	2085	94 53 33	2083	96 44 58	2083	98 36 24	2083
	Aldebaran	W.	62 20 39	2141	64 10 36	2136	66 0 40	2134	67 50 48	2131
	Sun	E.	25 54 51	2359	24 10 17	2359	22 25 44	2362	20 41 14	2365

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semidiameter.	Sidereal Time of Semidiameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	10 42 24.83	9.071	N. 8 11 59.1	−54.56	15 53.67	64.41	0 7.70	0.783
SUN.	2	10 46 2.39	9.059	7 50 5.8	54.89	15 53.90	64.37	0 26.64	0.795
Mon.	3	10 49 39.66	9.047	7 28 4.9	55.19	15 54.14	64.33	0 45.87	0.807
Tues.	4	10 53 16.66	9.036	7 5 56.8	−55.48	15 54.38	64.30	1 5.37	0.818
Wed.	5	10 56 53.41	9.026	6 43 41.9	55.76	15 54.62	64.26	1 25.12	0.828
Thur.	6	11 0 29.91	9.017	6 21 20.5	56.02	15 54.87	64.23	1 45.12	0.838
Frid.	7	11 4 6.20	9.008	5 58 52.9	−56.27	15 55.12	64.20	2 5.33	0.847
Sat.	8	11 7 42.28	9.000	5 36 19.5	56.51	15 55.37	64.18	2 25.75	0.855
SUN.	9	11 11 18.18	8.993	5 13 40.5	56.73	15 55.62	64.15	2 46.35	0.862
Mon.	10	11 14 53.91	8.986	4 50 56.4	−56.94	15 55.88	64.13	3 7.11	0.868
Tues.	11	11 18 29.50	8.981	4 28 7.5	57.13	15 56.14	64.12	3 28.02	0.874
Wed.	12	11 22 4.97	8.976	4 5 14.0	57.31	15 56.39	64.10	3 49.05	0.879
Thur.	13	11 25 40.34	8.972	3 42 16.2	−57.48	15 56.65	64.09	4 10.18	0.882
Frid.	14	11 29 15.63	8.969	3 19 14.5	57.64	15 56.91	64.08	4 31.38	0.885
Sat.	15	11 32 50.86	8.968	2 56 9.1	57.79	15 57.17	64.08	4 52.64	0.886
SUN.	16	11 36 26.07	8.967	2 33 0.4	−57.93	15 57.43	64.07	5 13.92	0.887
Mon.	17	11 40 1.27	8.967	2 9 48.6	58.05	15 57.69	64.07	5 35.22	0.887
Tues.	18	11 43 36.49	8.968	1 46 34.1	58.16	15 57.95	64.07	5 56.50	0.886
Wed.	19	11 47 11.75	8.970	1 23 17.1	−58.26	15 58.21	64.08	6 17.73	0.884
Thur.	20	11 50 47.07	8.973	0 59 58.1	58.34	15 58.47	64.09	6 38.91	0.881
Frid.	21	11 54 22.47	8.977	0 36 37.2	58.41	15 58.73	64.10	7 0.00	0.877
Sat.	22	11 57 57.98	8.982	N. 0 13 14.9	−58.46	15 58.99	64.11	7 20.99	0.872
SUN.	23	12 1 33.62	8.988	S. 0 10 8.6	58.50	15 59.26	64.13	7 41.84	0.866
Mon.	24	12 5 9.41	8.995	0 33 32.8	58.52	15 59.52	64.15	8 2.56	0.859
Tues.	25	12 8 45.36	9.002	0 56 57.6	−58.53	15 59.79	64.17	8 23.10	0.852
Wed.	26	12 12 21.50	9.010	1 20 22.3	58.53	16 0.05	64.20	8 43.46	0.844
Thur.	27	12 15 57.84	9.019	1 43 46.8	58.51	16 0.32	64.23	9 3.62	0.835
Frid.	28	12 19 34.40	9.028	2 7 10.6	−58.47	16 0.60	64.26	9 23.56	0.826
Sat.	29	12 23 11.20	9.039	2 30 33.3	58.41	16 0.87	64.30	9 43.26	0.816
SUN.	30	12 26 48.26	9.050	2 53 54.6	58.34	16 1.15	64.34	10 2.70	0.805
Mon.	31	12 30 25.58	9.062	S. 3 17 14.0	−58.26	16 1.42	64.38	10 21.88	0.793

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^{s}.18$ from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	10 42 24.85	9.073	N. 8 11 58.9	−54.57	0 7.70	0.783	10 42 32.55
SUN.	2	10 46 2.45	9.061	7 50 5.3	54.90	0 26.65	0.795	10 46 29.10
Mon.	3	10 49 39.77	9.049	7 28 4.1	55.20	0 45.88	0.807	10 50 25.66
Tues.	4	10 53 16.82	9.038	7 5 55.7	−55.49	1 5.39	0.818	10 54 22.21
Wed.	5	10 56 53.62	9.028	6 43 40.5	55.77	1 25.15	0.828	10 58 18.76
Thur.	6	11 0 30.17	9.019	6 21 18.8	56.03	1 45.15	0.838	11 2 15.32
Frid.	7	11 4 6.51	9.010	5 58 50.9	−56.28	2 5.36	0.847	11 6 11.87
Sat.	8	11 7 42.64	9.002	5 36 17.1	56.52	2 25.78	0.855	11 10 8.43
SUN.	9	11 11 18.59	8.995	5 13 37.8	56.74	2 46.39	0.862	11 14 4.98
Mon.	10	11 14 54.38	8.988	4 50 53.4	−56.95	3 7.15	0.868	11 18 1.53
Tues.	11	11 18 30.02	8.983	4 28 4.1	57.15	3 28.07	0.874	11 21 58.09
Wed.	12	11 22 5.54	8.978	4 5 10.2	57.33	3 49.10	0.879	11 25 54.64
Thur.	13	11 25 40.96	8.974	3 42 12.1	−57.50	4 10.24	0.882	11 29 51.20
Frid.	14	11 29 16.30	8.972	3 19 10.0	57.66	4 31.45	0.885	11 33 47.75
Sat.	15	11 32 51.59	8.970	2 56 4.3	57.81	4 52.71	0.887	11 37 44.30
SUN.	16	11 36 26.86	8.969	2 32 55.2	−57.94	5 14.00	0.887	11 41 40.86
Mon.	17	11 40 2.11	8.969	2 9 43.1	58.06	5 35.30	0.887	11 45 37.41
Tues.	18	11 43 37.38	8.970	1 46 28.3	58.17	5 56.58	0.886	11 49 33.96
Wed.	19	11 47 12.69	8.973	1 23 11.0	−58.27	6 17.83	0.884	11 53 30.52
Thur.	20	11 50 48 06	8.976	0 59 51.6	58.35	6 39.01	0.881	11 57 27.07
Frid.	21	11 54 23.52	8.980	0 36 30.3	58.42	7 0.10	0.877	12 1 23.62
Sat.	22	11 57 59.08	8.984	N. 0 13 7.7	−58.47	7 21.10	0.872	12 5 20.18
SUN.	23	12 1 34.78	8.990	S. 0 10 16.2	58.51	7 41.96	0.866	12 9 16.73
Mon.	24	12 5 10.61	8.997	0 33 40.7	58.53	8 2.67	0.859	12 13 13.29
Tues.	25	12 8 46.62	9.004	0 57 5.8	−58.54	8 23.22	0.852	12 17 9.84
Wed.	26	12 12 22.81	9.012	1 20 30.8	58.54	8 43.58	0.844	12 21 6.39
Thur.	27	12 15 59.20	9.021	1 43 55.6	58.52	9 3.75	0.835	12 25 2.95
Frid.	28	12 19 35.82	9.030	2 7 19.7	−58.48	9 23.68	0.826	12 28 59.50
Sat.	29	12 23 12.67	9.041	2 30 42.8	58.42	9 43.39	0.816	12 32 56.05
SUN.	30	12 26 49.77	9.052	2 54 4.4	58.35	10 2.84	0.805	12 36 52.61
Mon.	31	12 30 27.15	9.063	S. 3 17 24.1	−58.28	10 22.01	0.793	12 40 49.16

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that north declinations are decreasing; south declinations, increasing

Diff. for 1 Hour,
$+9^s.8565$.
(Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S TRUE LONGITUDE. λ	THE SUN'S TRUE LONGITUDE. λ′	Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		° ′ ″	′ ″	″	″			h m s
1	244	158 60 31.8	59 58.1	145.34	+ 0.07	0.0037783	-44.0	13 15 16.81
2	245	159 58 40.7	58 6.8	145.40	— 0.06	0.0036720	44.7	13 11 20.90
3	246	160 56 51.1	56 17.1	145.47	0.19	0.0035639	45.3	13 7 24.99
4	247	161 55 3.1	54 29.0	145.53	— 0.31	0.0034544	-45.9	13 3 29.08
5	248	162 53 16.7	52 42.5	145.59	0.41	0.0033434	46.5	12 59 33.18
6	249	163 51 31.6	50 57.3	145.65	0.49	0.0032311	47.0	12 55 37.27
7	250	164 49 48.1	49 13.6	145.72	— 0.54	0.0031177	-47.5	12 51 41.36
8	251	165 48 6.2	47 31.6	145.78	0.56	0.0030032	47.9	12 47 45.45
9	252	166 46 25.7	45 51.0	145.85	0.54	0.0028879	48.2	12 43 49.54
10	253	167 44 46.8	44 12.0	145.91	— 0.49	0.0027720	-48.4	12 39 53.64
11	254	168 43 9.5	42 34.6	145.98	0.43	0.0026556	48.6	12 35 57.73
12	255	169 41 33.9	40 58.9	146.05	0.34	0.0025387	48.7	12 32 1.82
13	256	170 39 59.9	39 24.8	146.12	— 0.23	0.0024216	-48.8	12 28 5.91
14	257	171 38 27.8	37 52.6	146.20	— 0.10	0.0023044	48.9	12 24 10.00
15	258	172 36 57.4	36 22.0	146.28	+ 0.04	0.0021869	49.0	12 20 14.10
16	259	173 35 29.1	34 53.6	146.36	+ 0.17	0.0020692	-49.0	12 16 18.19
17	260	174 34 2.7	33 27.1	146.44	0.30	0.0019516	49.0	12 12 22.28
18	261	175 32 38.4	32 2.7	146.53	0.41	0.0018338	49.1	12 8 26.37
19	262	176 31 16.2	30 40.4	146.62	+ 0.50	0.0017158	-49.2	12 4 30.46
20	263	177 29 56.3	29 20.4	146.71	0.56	0.0015977	49.3	12 0 34.56
21	264	178 28 38.5	28 2.4	146.81	0.60	0.0014793	49.4	11 56 38.65
22	265	179 27 23.0	26 46.8	146.90	+ 0.61	0.0013604	-49.6	11 52 42.74
23	266	180 26 9.8	25 33.5	147.00	0.58	0.0012412	49.8	11 48 46.83
24	267	181 24 58.9	24 22.5	147.09	0.53	0.0011212	50.1	11 44 50.93
25	268	182 23 50.3	23 13.8	147.19	+ 0.44	0.0010006	-50.4	11 40 55.02
26	269	183 22 43.8	22 7.2	147.28	0.34	0.0008794	50.7	11 36 59.11
27	270	184 21 39.5	21 2.9	147.37	0.22	0.0007572	51.1	11 33 3.20
28	271	185 20 37.5	20 0.7	147.46	+ 0.09	0.0006343	-51.4	11 29 7.29
29	272	186 19 37.5	19 0.6	147.54	— 0.04	0.0005105	51.7	11 25 11.39
30	273	187 18 39.5	18 2.4	147.63	0.17	0.0003859	52.1	11 21 15.48
31	274	188 17 43.7	17 6.5	147.71	— 0.29	0.0002605	-52.4	11 17 19.57

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0ᵈ.0.

Diff. for 1 Hour,
—9ˢ.8296.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	16 13.1	16 6.5	59 24.8	−1.93	59 0.5	−2.09	1 25.9	1.99	1.7
2	15 59.4	15 52.1	58 34.6	2.20	58 7.8	2.25	2 13.2	1.96	2.7
3	15 44.7	15 37.4	57 40.6	2.26	57 13.6	2.22	3 0.4	1.98	3.7
4	15 30.2	15 23.4	56 47.3	−2.14	56 22.2	−2.03	3 48.6	2.03	4.7
5	15 17.0	15 11.1	55 58.6	1.89	55 36.9	1.72	4 38.2	2.11	5.7
6	15 5.7	15 1.0	55 17.3	1.54	55 0.0	1.34	5 29.4	2.16	6.7
7	14 56.9	14 53.5	54 45.1	−1.14	54 32.6	−0.93	6 21.6	2.17	7.7
8	14 50.8	14 48.8	54 22.7	0.72	54 15.3	0.52	7 13.8	2.16	8.7
9	14 47.5	14 46.8	54 10.3	−0.32	54 7.7	−0.13	8 5.0	2.08	9.7
10	14 46.7	14 47.1	54 7.3	+0.06	54 9.1	+0.23	8 54.1	2.00	10.7
11	14 48.2	14 49.7	54 12.8	0.39	54 18.4	0.53	9 40.8	1.89	11.7
12	14 51.6	14 54.0	54 25.6	0.66	54 34.3	0.78	10 25.1	1.80	12.7
13	14 56.7	14 59.7	54 44.3	+0.88	54 55.3	+0.96	11 7.5	1.74	13.7
14	15 3.0	15 6.5	55 7.3	1.03	55 20.1	1.09	11 48.9	1.72	14.7
15	15 10.1	15 13.9	55 33.5	1.13	55 47.3	1.17	12 30.3	1.73	15.7
16	15 17.8	15 21.7	56 1.6	+1.20	56 16.1	+1.22	13 12.6	1.80	16.7
17	15 25.7	15 29.8	56 30.7	1.23	56 45.6	1.24	13 57.1	1.92	17.7
18	15 33.8	15 37.9	57 0.5	1.25	57 15.5	1.26	14 45.0	2.08	18.7
19	15 42.0	15 46.0	57 30.5	+1.25	57 45.4	+1.24	15 37.2	2.27	19.7
20	15 50.1	15 54.1	58 0.3	1.23	58 15.0	1.22	16 34.1	2.46	20.7
21	15 58.1	16 1.9	58 29.6	1.20	58 43.7	1.15	17 34.9	2.58	21.7
22	16 5.6	16 9.1	58 57.3	+1.10	59 10.2	+1.03	18 37.5	2.61	22.7
23	16 12.4	16 15.3	59 22.1	0.94	59 32.8	0.83	19 39.5	2.53	23.7
24	16 17.8	16 19.7	59 41.9	0.68	59 49.2	0.52	20 38.4	2.38	24.7
25	16 21.1	16 21.8	59 54.3	+0.32	59 56.9	+0.10	21 33.6	2.22	25.7
26	16 21.8	16 21.0	59 56.8	−0.13	59 53.8	−0.38	22 25.1	2.08	26.7
27	16 19.4	16 16.9	59 47.8	0.63	59 38.8	0.88	23 14.1	2.01	28.7
28	16 13.6	16 9.6	59 26.8	−1.11	59 12.1	−1.33	6		29.7
29	16 4.9	15 59.7	58 54.8	1.53	58 35.4	1.69	0 1.7	1.98	0.3
30	15 53.9	15 47.8	58 14.3	1.82	57 51.8	1.90	0 49.1	1.99	1.3
31	15 41.5	15 35.0	57 28.6	−1.95	57 5.0	−1.95	1 37.4	2.04	2.3

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 5 42.03	2.0914	S. 0 39 13.8	17.168
1	12 7 47.45	2.0893	0 56 23.2	17.145
2	12 9 52.75	2.0874	1 13 31.2	17.121
3	12 11 57.94	2.0855	1 30 37.7	17.094
4	12 14 3.01	2.0836	1 47 42.5	17.066
5	12 16 7.97	2.0818	2 4 45.6	17.036
6	12 18 12.82	2.0801	2 21 46.8	17.004
7	12 20 17.58	2.0785	2 38 46.1	16.972
8	12 22 22.24	2.0769	2 55 43.4	16.938
9	12 24 26.81	2.0755	3 12 38.7	16.903
10	12 26 31.30	2.0742	3 29 31.8	16.866
11	12 28 35.72	2.0730	3 46 22.6	16.827
12	12 30 40.06	2.0718	4 3 11.1	16.787
13	12 32 44.33	2.0707	4 19 57.1	16.746
14	12 34 48.54	2.0696	4 36 40.6	16.703
15	12 36 52.68	2.0686	4 53 21.5	16.660
16	12 38 56.77	2.0677	5 9 59.8	16.614
17	12 41 0.81	2.0669	5 26 35.2	16.566
18	12 43 4.80	2.0662	5 43 7.7	16.518
19	12 45 8.75	2.0655	5 59 37.3	16.469
20	12 47 12.66	2.0649	6 16 4.0	16.419
21	12 49 16.54	2.0645	6 32 27.6	16.367
22	12 51 20.40	2.0642	6 48 48.0	16.313
23	12 53 24.24	2.0638	S. 7 5 5.1	16.258

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 55 28.06	2.0635	S. 7 21 18.9	16.202
1	12 57 31.86	2.0633	7 37 29.3	16.144
2	12 59 35.65	2.0632	7 53 36.2	16.086
3	13 1 39.44	2.0632	8 9 39.6	16.026
4	13 3 43.23	2.0632	8 25 39.3	15.964
5	13 5 47.02	2.0633	8 41 35.3	15.902
6	13 7 50.82	2.0634	8 57 27.6	15.838
7	13 9 54.63	2.0637	9 13 16.0	15.773
8	13 11 58.46	2.0640	9 29 0.5	15.707
9	13 14 2.31	2.0644	9 44 40.9	15.640
10	13 16 6.19	2.0648	10 0 17.3	15.572
11	13 18 10.09	2.0652	10 15 49.6	15.503
12	13 20 14.02	2.0658	10 31 17.7	15.432
13	13 22 17.99	2.0665	10 46 41.5	15.361
14	13 24 22.00	2.0672	11 2 1.0	15.288
15	13 26 26.06	2.0680	11 17 16.0	15.214
16	13 28 30.16	2.0688	11 32 26.6	15.139
17	13 30 34.32	2.0697	11 47 32.7	15.062
18	13 32 38.53	2.0707	12 2 34.1	14.984
19	13 34 42.80	2.0717	12 17 30.8	14.906
20	13 36 47.13	2.0727	12 32 22.8	14.828
21	13 38 51.53	2.0739	12 47 10.1	14.748
22	13 40 56.00	2.0751	13 1 52.5	14.666
23	13 43 0.54	2.0763	13 16 30.0	14.583
24	13 45 5.15	2.0775	S. 13 31 2.4	14.499

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 45 5.15	2.0775	S. 13 31 2.4	14.499
1	13 47 9.84	2.0789	13 45 29.8	14.414
2	13 49 14.62	2.0804	13 59 52.1	14.328
3	13 51 19.49	2.0819	14 14 9.2	14.241
4	13 53 24.45	2.0834	14 28 21.0	14.153
5	13 55 29.50	2.0849	14 42 27.6	14.065
6	13 57 34.64	2.0865	14 56 28.8	13.975
7	13 59 39.88	2.0882	15 10 24.6	13.885
8	14 1 45.22	2.0899	15 24 15.0	13.793
9	14 3 50.67	2.0917	15 37 59.8	13.700
10	14 5 56.22	2.0935	15 51 39.0	13.607
11	14 8 1.89	2.0954	16 5 12.6	13.513
12	14 10 7.67	2.0973	16 18 40.5	13.418
13	14 12 13.56	2.0992	16 32 2.7	13.321
14	14 14 19.57	2.1012	16 45 19.0	13.223
15	14 16 25.70	2.1032	16 58 29.4	13.124
16	14 18 31.95	2.1052	17 11 33.9	13.026
17	14 20 38.32	2.1073	17 24 32.5	12.927
18	14 22 44.82	2.1094	17 37 25.1	12.826
19	14 24 51.45	2.1116	17 50 11.6	12.723
20	14 26 58.21	2.1138	18 2 51.9	12.620
21	14 29 5.10	2.1160	18 15 26.0	12.517
22	14 31 12.13	2.1182	18 27 53.9	12.413
23	14 33 19.29	2.1205	S. 18 40 15.6	12.308

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	14 35 26.59	2.1228	S. 18 52 30.9	12.201
1	14 37 34.03	2.1252	19 4 39.8	12.095
2	14 39 41.61	2.1276	19 16 42.3	11.987
3	14 41 49.34	2.1300	19 28 38.3	11.878
4	14 43 57.21	2.1323	19 40 27.7	11.769
5	14 46 5.22	2.1347	19 52 10.6	11.660
6	14 48 13.38	2.1372	20 3 46.9	11.549
7	14 50 21.69	2.1397	20 15 16.5	11.437
8	14 52 30.15	2.1422	20 26 39.3	11.324
9	14 54 38.76	2.1447	20 37 55.4	11.212
10	14 56 47.52	2.1472	20 49 4.7	11.098
11	14 58 56.43	2.1497	21 0 7.1	10.983
12	15 1 5.49	2.1523	21 11 2.6	10.868
13	15 3 14.71	2.1549	21 21 51.2	10.752
14	15 5 24.08	2.1574	21 32 32.8	10.634
15	15 7 33.60	2.1600	21 43 7.3	10.516
16	15 9 43.28	2.1626	21 53 34.7	10.396
17	15 11 53.12	2.1652	22 3 55.0	10.279
18	15 14 3.11	2.1678	22 14 8.2	10.160
19	15 16 13.26	2.1704	22 24 14.2	10.039
20	15 18 23.56	2.1730	22 34 12.9	9.918
21	15 20 34.02	2.1756	22 44 4.3	9.796
22	15 22 44.63	2.1782	22 53 48.4	9.673
23	15 24 55.40	2.1808	23 3 25.1	9.551
24	15 27 6.33	2.1834	S. 23 12 54.5	9.428

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	WEDNESDAY 5.					**FRIDAY 7.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	15 27 6.33	2.1834	S.23 12 54.5	9.428	0	17 14 23.44	2.2702	S.28 12 57.1	2.925
1	15 29 17.41	2.1859	23 22 16.4	9.303	1	17 16 39.67	2.2707	28 15 48.3	2.782
2	15 31 28.64	2.1885	23 31 30.8	9.178	2	17 18 55.93	2.2712	28 18 31.0	2.640
3	15 33 40.03	2.1911	23 40 37.7	9.052	3	17 21 12.21	2.2715	28 21 5.1	2.497
4	15 35 51.57	2.1936	23 49 37.0	8.925	4	17 23 28.51	2.2718	28 23 30.7	2.355
5	15 38 3.26	2.1961	23 58 28.7	8.799	5	17 25 44.82	2.2720	28 25 47.7	2.212
6	15 40 15.10	2.1986	24 7 12.9	8.672	6	17 28 1.15	2.2722	28 27 56.1	2.069
7	15 42 27.09	2.2011	24 15 49.4	8.544	7	17 30 17.48	2.2722	28 29 55.9	1.926
8	15 44 39.23	2.2036	24 24 18.2	8.415	8	17 32 33.81	2.2722	28 31 47.2	1.783
9	15 46 51.52	2.2061	24 32 39.2	8.286	9	17 34 50.14	2.2721	28 33 29.9	1.640
10	15 49 3.96	2.2085	24 40 52.5	8.157	10	17 37 6.46	2.2719	28 35 4.0	1.497
11	15 51 16.54	2.2108	24 48 58.0	8.028	11	17 39 22.77	2.2717	28 36 29.6	1.355
12	15 53 29.26	2.2132	24 56 55.6	7.895	12	17 41 39.06	2:2713	28 37 46.6	1.212
13	15 55 42.13	2.2156	25 4 45.4	7.764	13	17 43 55.33	2.2709	28 38 55.0	1.069
14	15 57 55.14	2.2179	25 12 27.3	7.632	14	17 46 11.57	2.2705	28 39 54.9	0.927
15	16 0 8.28	2.2202	25 20 1.3	7.500	15	17 48 27.79	2.2700	28 40 46.2	0.784
16	16 2 21.56	2.2225	25 27 27.3	7.367	16	17 50 43.97	2.2694	28 41 29.0	0.642
17	16 4 34.98	2.2247	25 34 45.3	7.234	17	17 53 0.12	2.2687	28 42 3.3	0.500
18	16 6 48.53	2.2269	25 41 55.4	7.101	18	17 55 16.22	2.2679	28 42 29.0	0.358
19	16 9 2.21	2.2291	25 48 57.4	6.966	19	17 57 32.27	2.2671	28 42 46.2	0.216
20	16 11 16.02	2.2312	25 55 51.3	6.831	20	17 59 48.27	2.2662	28 42 54.9	− 0.074
21	16 13 29.95	2.2333	26 2 37.1	6.696	21	18 2 4.22	2.2652	28 42 55.1	+ 0.067
22	16 15 44.01	2.2353	26 9 14.8	6.561	22	18 4 20.10	2.2641	28 42 46.8	0.209
23	16 17 58.19	2.2373	S.26 15 44.4	6.425	23	18 6 35.91	2.2630	S.28 42 30.0	0.351
	THURSDAY 6.					**SATURDAY 8.**			
0	16 20 12.49	2.2393	S.26 22 5.8	6.288	0	18 8 51.66	2.2618	S.28 42 4.7	0.492
1	16 22 26.90	2.2412	26 28 19.0	6.152	1	18 11 7.33	2.2605	28 41 31.0	0.633
2	16 24 41.43	2.2431	26 34 24.0	6.015	2	18 13 22.92	2.2592	28 40 48.8	0.773
3	16 26 56.07	2.2449	26 40 20.8	5.877	3	18 15 38.43	2.2577	28 39 58.2	0.913
4	16 29 10.82	2.2467	26 46 9.3	5.739	4	18 17 53.85	2.2562	28 38 59.2	1.053
5	16 31 25.67	2.2484	26 51 49.5	5.601	5	18 20 9.17	2.2546	28 37 51.8	1.193
6	16 33 40.63	2.2501	26 57 21.4	5.462	6	18 22 24.40	2.2530	28 36 36.1	1.332
7	16 35 55.69	2.2518	27 2 45.0	5.323	7	18 24 39.53	2.2512	28 35 12.0	1.471
8	16 38 10.84	2.2533	27 8 0.2	5.184	8	18 26 54.55	2.2494	28 33 39.6	1.610
9	16 40 26.08	2.2548	27 13 7.1	5.045	9	18 29 9.46	2.2476	28 31 58.8	1.749
10	16 42 41.41	2.2563	27 18 5.6	4.905	10	18 31 24.26	2.2457	28 30 9.7	1.887
11	16 44 56.83	2.2577	27 22 55.7	4.766	11	18 33 38.94	2.2437	28 28 12.4	2.024
12	16 47 12.33	2.2590	27 27 37.5	4.626	12	18 35 53.50	2.2416	28 26 6.8	2.162
13	16 49 27.91	2.2603	27 32 10.8	4.484	13	18 38 7.93	2.2394	28 23 53.0	2.298
14	16 51 43.56	2.2615	27 36 35.6	4.343	14	18 40 22.23	2.2372	28 21 31.0	2.435
15	16 53 59.29	2.2627	27 40 52.0	4.202	15	18 42 36.40	2.2350	28 19 0.8	2.572
16	16 56 15.09	2.2638	27 44 59.9	4.061	16	18 44 50.43	2.2326	28 16 22.4	2.707
17	16 58 30.95	2.2648	27 48 59.3	3.920	17	18 47 4.31	2.2302	28 13 35.9	2.842
18	17 0 46.87	2.2658	27 52 50.3	3.779	18	18 49 18.05	2.2277	28 10 41.3	2.977
19	17 3 2.85	2.2667	27 56 32.8	3.637	19	18 51 31.64	2.2252	28 7 38.6	3.112
20	17 5 18.88	2.2676	28 0 6.7	3.494	20	18 53 45.08	2.2227	28 4 27.9	3.246
21	17 7 34.96	2.2683	28 3 32.1	3.352	21	18 55 58.36	2.2200	28 1 9.1	3.380
22	17 9 51.08	2.2690	28 6 49.0	3.210	22	18 58 11.48	2.2173	27 57 42.3	3.513
23	17 12 7.24	2.2697	28 9 57.3	3.067	23	19 0 24.44	2.2146	27 54 7.6	3.645
24	17 14 23.44	2.2702	S.28 12 57.1	2.925	24	19 2 37.23	2.2117	S.27 50 24.9	3.777

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 2 37.23	2.2117	S.27 50 24.9	3.777
1	19 4 49.85	2.2088	27 46 34.3	3.908
2	19 7 2.29	2.2059	27 42 35.9	4.039
3	19 9 14.56	2.2030	27 38 29.6	4.170
4	19 11 26.65	2.2000	27 34 15.5	4.300
5	19 13 38.56	2.1969	27 29 53.6	4.430
6	19 15 50.28	2.1938	27 25 23.9	4.559
7	19 18 1.81	2.1906	27 20 46.5	4.687
8	19 20 13.15	2.1874	27 16 1.5	4.814
9	19 22 24.30	2.1842	27 11 8.8	4.941
10	19 24 35.25	2.1808	27 6 8.5	5.067
11	19 26 46.00	2.1774	27 1 0.7	5.193
12	19 28 56.54	2.1740	26 55 45.3	5.319
13	19 31 6.88	2.1706	26 50 22.4	5.443
14	19 33 17.01	2.1672	26 44 52.1	5.567
15	19 35 26.94	2.1637	26 39 14.3	5.691
16	19 37 36.66	2.1602	26 33 29.1	5.814
17	19 39 46.16	2.1566	26 27 36.6	5.936
18	19 41 55.45	2.1530	26 21 36.8	6.057
19	19 44 4.52	2.1493	26 15 29.7	6.178
20	19 46 13.37	2.1456	26 9 15.4	6.298
21	19 48 22.00	2.1419	26 2 53.9	6.418
22	19 50 30.40	2.1382	25 56 25.3	6.537
23	19 52 38.58	2.1345	S.25 49 49.5	6.656

MONDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 54 46.54	2.1307	S.25 43 6.6	6.773
1	19 56 54.27	2.1269	25 36 16.7	6.889
2	19 59 1.77	2.1231	25 29 19.9	7.005
3	20 1 9.04	2.1192	25 22 16.1	7.121
4	20 3 16.08	2.1154	25 15 5.4	7.235
5	20 5 22.89	2.1115	25 7 47.9	7.349
6	20 7 29.46	2.1076	25 0 23.6	7.462
7	20 9 35.80	2.1037	24 52 52.5	7.574
8	20 11 41.91	2.0998	24 45 14.7	7.686
9	20 13 47.78	2.0959	24 37 30.2	7.797
10	20 15 53.42	2.0920	24 29 39.0	7.907
11	20 17 58.82	2.0880	24 21 41.3	8.017
12	20 20 3.98	2.0840	24 13 37.0	8.126
13	20 22 8.90	2.0801	24 5 26.2	8.233
14	20 24 13.59	2.0762	23 57 9.0	8.340
15	20 26 18.04	2.0722	23 48 45.4	8.447
16	20 28 22.25	2.0682	23 40 15.4	8.552
17	20 30 26.22	2.0642	23 31 39.1	8.657
18	20 32 29.96	2.0603	23 22 56.5	8.762
19	20 34 33.46	2.0563	23 14 7.7	8.865
20	20 36 36.72	2.0523	23 5 12.7	8.967
21	20 38 39.74	2.0483	22 56 11.6	9.069
22	20 40 42.52	2.0444	22 47 4.4	9.170
23	20 42 45.07	2.0405	22 37 51.2	9.271
24	20 44 47.38	2.0365	S.22 28 31.9	9.371

TUESDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 44 47.38	2.0365	S.22 28 31.9	9.371
1	20 46 49.45	2.0326	22 19 6.7	9.469
2	20 48 51.29	2.0287	22 9 35.7	9.566
3	20 50 52.90	2.0249	21 59 58.8	9.663
4	20 52 54.28	2.0210	21 50 16.1	9.759
5	20 54 55.42	2.0170	21 40 27.7	9.855
6	20 56 56.32	2.0131	21 30 33.5	9.950
7	20 58 56.99	2.0093	21 20 33.7	10.044
8	21 0 57.44	2.0056	21 10 28.3	10.137
9	21 2 57.66	2.0018	21 0 17.3	10.229
10	21 4 57.65	1.9980	20 50 0.8	10.320
11	21 6 57.42	1.9942	20 39 38.9	10.411
12	21 8 56.96	1.9905	20 29 11.5	10.501
13	21 10 56.28	1.9867	20 18 38.7	10.590
14	21 12 55 37	1.9830	20 8 0.7	10.678
15	21 14 54.24	1.9793	19 57 17.4	10.765
16	21 16 52.89	1.9757	19 46 28.9	10.852
17	21 18 51.33	1.9722	19 35 35.2	10.938
18	21 20 49.55	1.9686	19 24 36.4	11.023
19	21 22 47.56	1.9650	19 13 32.5	11.107
20	21 24 45.35	1.9614	19 2 23.6	11.189
21	21 26 42.93	1.9580	18 51 9.8	11.271
22	21 28 40.31	1.9546	18 39 51.1	11.353
23	21 30 37.48	1.9511	S.18 28 27.4	11.435

WEDNESDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 32 34.44	1.9477	S.18 16 58.9	11.515
1	21 34 31.20	1.9444	18 5 25.6	11.594
2	21 36 27.76	1.9411	17 53 47.6	11.672
3	21 38 24.13	1.9378	17 42 5.0	11.749
4	21 40 20.30	1.9345	17 30 17.8	11.826
5	21 42 16.27	1.9313	17 18 25.9	11.902
6	21 44 12.05	1.9281	17 6 29.5	11.977
7	21 46 7.64	1.9250	16 54 28.6	12.052
8	21 48 3.05	1.9219	16 42 23.3	12.125
9	21 49 58.27	1.9188	16 30 13.6	12.197
10	21 51 53.31	1.9158	16 17 59.6	12.269
11	21 53 48.17	1.9129	16 5 41.3	12.340
12	21 55 42.86	1.9101	15 53 18.8	12.410
13	21 57 37.38	1.9072	15 40 52.1	12.479
14	21 59 31.72	1.9043	15 28 21.3	12.548
15	22 1 25.89	1.9015	15 15 46.4	12.616
16	22 3 19.90	1.8988	15 3 7.4	12.683
17	22 5 13.75	1.8961	14 50 24.5	12.748
18	22 7 7.43	1.8934	14 37 37.7	12.813
19	22 9 0.95	1.8908	14 24 47.0	12.878
20	22 10 54.32	1.8883	14 11 52.4	12.942
21	22 12 47.55	1.8859	13 58 54.0	13.004
22	22 14 40.63	1.8834	13 45 51.9	13.065
23	22 16 33.56	1.8810	13 32 46.2	13.126
24	22 18 26.35	1.8787	S.13 19 36.8	13.187

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 13.					**SATURDAY 15.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	′
0	22 18 26.35	1.8787	S. 13 19 36.8	13.187	0	23 47 1.22	1.8365	S. 1 53 43.5	15.056
1	22 20 19.00	1.8764	13 6 23.8	13.246	1	23 48 51.43	1.8372	1 38 39.6	15.073
2	22 22 11.52	1.8742	12 53 7.3	13.304	2	23 50 41.68	1.8379	1 23 34.7	15.089
3	22 24 3.90	1.8719	12 39 47.3	13.362	3	23 52 31.98	1.8388	1 8 28.9	15.104
4	22 25 56.15	1.8697	12 26 23.9	13.418	4	23 54 22.34	1.8398	0 53 22.2	15.118
5	22 27 48.28	1.8677	12 12 57.1	13.474	5	23 56 12.76	1.8408	0 38 14.7	15.132
6	22 29 40.28	1.8657	11 59 27.0	13.529	6	23 58 3.24	1.8419	0 23 6.4	15.144
7	22 31 32.16	1.8638	11 45 53.6	13.583	7	23 59 53.79	1.8431	S. 0 7 57.4	15.155
8	22 33 23.93	1.8619	11 32 17.0	13.636	8	0 1 44.41	1.8444	N. 0 7 12.2	15.165
9	22 35 15.59	1.8601	11 18 37.3	13.689	9	0 3 35.11	1.8457	0 22 22.4	15.175
10	22 37 7.14	1.8583	11 4 54.4	13.741	10	0 5 25.89	1.8470	0 37 33.2	15.183
11	22 38 58.58	1.8565	10 51 8.4	13.791	11	0 7 16.75	1.8484	0 52 44.4	15.190
12	22 40 49.92	1.8548	10 37 19.5	13.840	12	0 9 7.70	1.8499	1 7 56.0	15.197
13	22 42 41.16	1.8532	10 23 27.6	13.889	13	0 10 58.74	1.8516	1 23 8.0	15.202
14	22 44 32.31	1.8516	10 9 32.8	13.938	14	0 12 49.89	1.8533	1 38 20.3	15.207
15	22 46 23.36	1.8501	9 55 35.0	13.987	15	0 14 41.14	1.8551	1 53 32.8	15.210
16	22 48 14.32	1.8487	9 41 34.4	14.033	16	0 16 32.50	1.8569	2 8 45.5	15.212
17	22 50 5.20	1.8473	9 27 31.1	14.078	17	0 18 23.97	1.8587	2 23 58.3	15.213
18	22 51 56.00	1.8460	9 13 25.1	14.122	18	0 20 15.55	1.8607	2 39 11.1	15.213
19	22 53 46.72	1.8448	8 59 16.5	14.166	19	0 22 7.26	1.8628	2 54 23.9	15.213
20	22 55 37.37	1.8436	8 45 5.2	14.210	20	0 23 59.09	1.8649	3 9 36.7	15.212
21	22 57 27.95	1.8424	8 30 51.3	14.252	21	0 25 51.05	1.8671	3 24 49.3	15.209
22	22 59 18.46	1.8413	8 16 34.9	14.293	22	0 27 43.14	1.8693	3 40 1.7	15.205
23	23 1 8.91	1.8403	S. 8 2 16.1	14.333	23	0 29 35.37	1.8717	N. 3 55 13.9	15.201
	FRIDAY 14.					**SUNDAY 16.**			
0	23 2 59.30	1.8394	S. 7 47 54.9	14.373	0	0 31 27.75	1.8742	N. 4 10 25.8	15.195
1	23 4 49.64	1.8386	7 33 31.4	14.412	1	0 33 20.28	1.8767	4 25 37.3	15.187
2	23 6 39.93	1.8377	7 19 5.5	14.450	2	0 35 12.96	1.8792	4 40 48.3	15.179
3	23 8 30.17	1.8369	7 4 37.4	14.487	3	0 37 5.79	1.8819	4 55 58.8	15.170
4	23 10 20.36	1.8362	6 50 7.1	14.523	4	0 38 58.79	1.8847	5 11 8.7	15.160
5	23 12 10.51	1.8356	6 35 34.7	14.558	5	0 40 51.95	1.8874	5 26 18.0	15.149
6	23 14 0.63	1.8351	6 21 0.2	14.593	6	0 42 45.28	1.8902	5 41 26.6	15.137
7	23 15 50.72	1.8346	6 6 23 6	14.626	7	0 44 38.78	1.8932	5 56 34.4	15.123
8	23 17 40.78	1.8341	5 51 45.1	14.658	8	0 46 32.47	1.8963	6 11 41.3	15.108
9	23 19 30.81	1.8337	5 37 4.7	14.689	9	0 48 26.34	1.8994	6 26 47.4	15.093
10	23 21 20.82	1.8334	5 22 22.4	14.721	10	0 50 20.40	1.9026	6 41 52.5	15.076
11	23 23 10.82	1.8332	5 7 38.2	14.751	11	0 52 14.66	1.9059	6 56 56.5	15.058
12	23 25 0.81	1.8331	4 52 52.3	14.779	12	0 54 9.11	1.9092	7 11 59.4	15.039
13	23 26 50.79	1.8329	4 38 4.7	14.807	13	0 56 3.76	1.9126	7 27 1.2	15.019
14	23 28 40.76	1.8329	4 23 15.4	14.835	14	0 57 58.62	1.9161	7 42 1.7	14.997
15	23 30 30.74	1.8330	4 8 24.5	14.862	15	0 59 53.70	1.9197	7 57 0.9	14.975
16	23 32 20.72	1.8331	3 53 32.0	14.887	16	1 1 48.99	1.9234	8 11 58.7	14.952
17	23 34 10.71	1.8333	3 38 38.1	14.910	17	1 3 44.51	1.9271	8 26 55.1	14.927
18	23 36 0.71	1.8335	3 23 42.8	14.933	18	1 5 40.25	1.9309	8 41 49.9	14.900
19	23 37 50.73	1.8338	3 8 46.1	14.956	19	1 7 36.22	1.9348	8 56 43.1	14.873
20	23 39 40.77	1.8342	2 53 48.0	14.979	20	1 9 32.43	1.9387	9 11 34.7	14.846
21	23 41 30.83	1.8346	2 38 48.6	15.000	21	1 11 28.87	1.9427	9 26 24.6	14.816
22	23 43 20.92	1.8352	2 23 48.0	15.019	22	1 13 25.56	1.9469	9 41 12.7	14.785
23	23 45 11.05	1.8358	2 8 46.3	15.038	23	1 15 22.50	1.9511	9 55 58.8	14.752
24	23 47 1.22	1.8365	S. 1 53 43.5	15.056	24	1 17 19.69	1.9553	N. 10 10 42.9	14.719

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 17 19.69	1.9553	N.10 10 42.9	14.719
1	1 19 17.14	1.9597	10 25 25.0	14.685
2	1 21 14.85	1.9641	10 40 5.1	14.650
3	1 23 12.83	1.9686	10 54 43.0	14.613
4	1 25 11.08	1.9732	11 9 18.7	14.575
5	1 27 9.61	1.9778	11 23 52.0	14.534
6	1 29 8.41	1.9824	11 38 22.9	14.494
7	1 31 7.50	1.9872	11 52 51.3	14.452
8	1 33 6.88	1.9921	12 7 17.2	14.410
9	1 35 6.55	1.9970	12 21 40.5	14.366
10	1 37 6.52	2.0021	12 36 1.1	14.320
11	1 39 6.80	2.0072	12 50 18.9	14.272
12	1 41 7.38	2.0123	13 4 33.8	14.224
13	1 43 8.27	2.0175	13 18 45.8	14.175
14	1 45 9.48	2.0228	13 32 54.8	14.123
15	1 47 11.01	2.0282	13 47 0.6	14.070
16	1 49 12.86	2.0336	14 1 3.2	14.017
17	1 51 15.04	2.0391	14 15 2.6	13.963
18	1 53 17.55	2.0447	14 28 58.7	13.907
19	1 55 20.40	2.0503	14 42 51.4	13.848
20	1 57 23.59	2.0560	14 56 40.5	13.788
21	1 59 27.12	2.0617	15 10 26.0	13.728
22	2 1 31.00	2.0676	15 24 7.8	13.666
23	2 3 35.23	2.0735	N.15 37 45.9	13.602

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 5 39.82	2.0795	N.15 51 20.1	13.537
1	2 7 44.77	2.0855	16 4 50.3	13.471
2	2 9 50.08	2.0916	16 18 16.6	13.404
3	2 11 55.76	2.0977	16 31 38.8	13.335
4	2 14 1.81	2.1040	16 44 56.8	13.264
5	2 16 8.24	2.1103	16 58 10.5	13.192
6	2 18 15.05	2.1167	17 11 19.9	13.119
7	2 20 22.24	2.1231	17 24 24.8	13.044
8	2 22 29.82	2.1295	17 37 25.2	12.967
9	2 24 37.78	2.1359	17 50 20.9	12.889
10	2 26 46.13	2.1425	18 3 11.9	12.810
11	2 28 54.88	2.1492	18 15 58.1	12.729
12	2 31 4.03	2.1559	18 28 39.4	12.647
13	2 33 13.58	2.1626	18 41 15.7	12.563
14	2 35 23.54	2.1693	18 53 46.9	12.478
15	2 37 33.90	2.1761	19 6 13.0	12.391
16	2 39 44.67	2.1830	19 18 33.8	12.302
17	2 41 55.86	2.1899	19 30 49.2	12.211
18	2 44 7.46	2.1968	19 42 59.1	12.119
19	2 46 19.48	2.2038	19 55 3.5	12.026
20	2 48 31.92	2.2109	20 7 2.2	11.931
21	2 50 44.79	2.2180	20 18 55.2	11.835
22	2 52 58.08	2.2251	20 30 42.4	11.737
23	2 55 11.80	2.2322	20 42 23.7	11.637
24	2 57 25.95	2.2394	N.20 53 58.9	11.536

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	2 57 25.95	2.2394	N.20 53 58.9	11.536
1	2 59 40.53	2.2466	21 5 28.0	11.433
2	3 1 55.54	2.2538	21 16 50.9	11.329
3	3 4 10.99	2.2611	21 28 7.5	11.224
4	3 6 26.87	2.2684	21 39 17.8	11.117
5	3 8 43.19	2.2757	21 50 21.5	11.007
6	3 10 59.95	2.2830	22 1 18.6	10.896
7	3 13 17.15	2.2903	22 12 9.0	10.784
8	3 15 34.79	2.2977	22 22 52.7	10.671
9	3 17 52.87	2.3050	22 33 29.5	10.555
10	3 20 11.39	2.3124	22 43 59.3	10.437
11	3 22 30.36	2.3198	22 54 22.0	10.318
12	3 24 49.77	2.3272	23 4 37.5	10.198
13	3 27 9.62	2.3346	23 14 45.8	10.077
14	3 29 29.92	2.3420	23 24 46.7	9.953
15	3 31 50.66	2.3493	23 34 40.1	9.828
16	3 34 11.84	2.3567	23 44 26.0	9.701
17	3 36 33.46	2.3641	23 54 4.2	9.572
18	3 38 55.53	2.3714	24 3 34.6	9.442
19	3 41 18.03	2.3788	24 12 57.2	9.310
20	3 43 40.98	2.3862	24 22 11.8	9.177
21	3 46 4.37	2.3935	24 31 18.4	9.042
22	3 48 28.20	2.4008	24 40 16.8	8.905
23	3 50 52.46	2.4080	N.24 49 7.0	8.767

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	3 53 17.16	2.4152	N.24 57 48.9	8.628
1	3 55 42.29	2.4224	25 6 22.4	8.487
2	3 58 7.85	2.4296	25 14 47.3	8.343
3	4 0 33.84	2.4367	25 23 3.6	8.199
4	4 3 0.25	2.4438	25 31 11.2	8.053
5	4 5 27.09	2.4508	25 39 10.0	7.906
6	4 7 54.35	2.4578	25 46 59.9	7.757
7	4 10 22.02	2.4647	25 54 40.8	7.606
8	4 12 50.11	2.4716	26 2 12.6	7.454
9	4 15 18.61	2.4783	26 9 35.3	7.301
10	4 17 47.51	2.4851	26 16 48.7	7.146
11	4 20 16.82	2.4918	26 23 52.8	6.989
12	4 22 46.53	2.4984	26 30 47.4	6.831
13	4 25 16.63	2.5049	26 37 32.5	6.672
14	4 27 47.12	2.5114	26 44 8.0	6.511
15	4 30 18.00	2.5178	26 50 33.8	6.349
16	4 32 49.26	2.5241	26 56 49.9	6.185
17	4 35 20.90	2.5303	27 2 56.0	6.019
18	4 37 52.90	2.5364	27 8 52.1	5.852
19	4 40 25.27	2.5425	27 14 38.2	5.685
20	4 42 58.00	2.5484	27 20 14.3	5.517
21	4 45 31.08	2.5542	27 25 40.2	5.346
22	4 48 4.50	2.5599	27 30 55.8	5.174
23	4 50 38.27	2.5656	27 36 1.1	5.001
24	4 53 12.37	2.5711	N.27 40 55.9	4.826

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	FRIDAY 21.					SUNDAY 23.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	4 53 12.37	2.5711	N.27 40 55.9	4.826	0	7 0 15.25	2.6604	N.27 55 35.0	4.376
1	4 55 46.80	2.5765	27 45 40.2	4.651	1	7 2 54.81	2.6583	27 51 6.6	4.570
2	4 58 21.55	2.5817	27 50 14.0	4.475	2	7 5 34.24	2.6560	27 46 26.6	4.763
3	5 0 56.61	2.5868	27 54 37.2	4.297	3	7 8 13.53	2.6535	27 41 35.1	4.955
4	5 3 31.97	2.5919	27 58 49.7	4.118	4	7 10 52.66	2.6508	27 36 32.0	5.147
5	5 6 7.64	2.5969	28 2 51.4	3.937	5	7 13 31.63	2.6481	27 31 17.4	5.339
6	5 8 43.60	2.6017	28 6 42.2	3.756	6	7 16 10.43	2.6452	27 25 51.3	5.530
7	5 11 19.84	2.6063	28 10 22.1	3.574	7	7 18 49.05	2.6421	27 20 13.8	5.720
8	5 13 56.35	2.6108	28 13 51.1	3.392	8	7 21 27.48	2.6388	27 14 24.9	5.908
9	5 16 33.13	2.6151	28 17 9.1	3.208	9	7 24 5.71	2.6355	27 8 24.8	6.096
10	5 19 10.16	2.6193	28 20 16.0	3.022	10	7 26 43.74	2.6321	27 2 13.4	6.283
11	5 21 47.45	2.6235	28 23 11.7	2.835	11	7 29 21.56	2.6285	26 55 50.8	6.470
12	5 24 24.98	2.6274	28 25 56.2	2.648	12	7 31 59.16	2.6247	26 49 17.0	6.656
13	5 27 2.74	2.6312	28 28 29.5	2.461	13	7 34 36.53	2.6209	26 42 32.1	6.840
14	5 29 40.72	2.6348	28 30 51.5	2.272	14	7 37 13.67	2.6169	26 35 36.2	7.023
15	5 32 18.92	2.6383	28 33 2.1	2.082	15	7 39 50.56	2.6128	26 28 29.3	7.206
16	5 34 57.32	2.6417	28 35 1.3	1.892	16	7 42 27.20	2.6086	26 21 11.5	7.387
17	5 37 35.92	2.6449	28 36 49.1	1.701	17	7 45 3.59	2.6043	26 13 42.9	7.567
18	5 40 14.71	2.6479	28 38 25.4	1.509	18	7 47 39.71	2.5998	26 6 3.4	7.747
19	5 42 53.67	2.6507	28 39 50.2	1.317	19	7 50 15.56	2.5953	25 58 13.2	7.925
20	5 45 32.80	2.6535	28 41 3.4	1.123	20	7 52 51.14	2.5907	25 50 12.4	8.101
21	5 48 12.09	2.6561	28 42 5.0	0.930	21	7 55 26.44	2.5859	25 42 1.1	8.276
22	5 50 51.53	2.6584	28 42 55.0	0.736	22	7 58 1.45	2.5810	25 33 39.3	8.451
23	5 53 31.10	2.6606	N.28 43 33.3	0.542	23	8 0 36.16	2.5760	N.25 25 7.0	8.624
	SATURDAY 22.					MONDAY 24.			
0	5 56 10.80	2.6627	N.28 44 0.0	0.347	0	8 3 10.57	2.5710	N.25 16 24.4	8.795
1	5 58 50.62	2.6646	28 44 14.9	+ 0.151	1	8 5 44.68	2.5659	25 7 31.6	8.965
2	6 1 30.55	2.6663	28 44 18.1	− 0.045	2	8 8 18.48	2.5607	24 58 28.6	9.134
3	6 4 10.57	2.6678	28 44 9.5	0.242	3	8 10 51.97	2.5555	24 49 15.5	9.302
4	6 6 50.68	2.6692	28 43 49.1	0.439	4	8 13 25.14	2.5501	24 39 52.4	9.468
5	6 9 30.87	2.6703	28 43 16.9	0.636	5	8 15 57.98	2.5446	24 30 19.4	9.633
6	6 12 11.12	2.6713	28 42 32.8	0.833	6	8 18 30.49	2.5391	24 20 36.5	9.796
7	6 14 51.43	2.6722	28 41 36.9	1.030	7	8 21 2.67	2.5336	24 10 43.9	9.957
8	6 17 31.78	2.6728	28 40 29.2	1.228	8	8 23 34.52	2.5280	24 0 41.6	10.117
9	6 20 12.17	2.6734	28 39 9.6	1.426	9	8 26 6.03	2.5223	23 50 29.8	10.276
10	6 22 52.59	2.6737	28 37 38.1	1.623	10	8 28 37.19	2.5165	23 40 8.5	10.433
11	6 25 33.02	2.6738	28 35 54.8	1.821	11	8 31 8.01	2.5107	23 29 37.8	10.588
12	6 28 13.45	2.6738	28 33 59.6	2.018	12	8 33 38.48	2.5049	23 18 57.9	10.742
13	6 30 53.88	2.6737	28 31 52.6	2.216	13	8 36 8.60	2.4990	23 8 8.8	10.895
14	6 33 34.29	2.6733	28 29 33.7	2.414	14	8 38 38.36	2.4931	22 57 10.5	11.046
15	6 36 14.67	2.6728	28 27 2.9	2.611	15	8 41 7.77	2.4872	22 46 3.3	11.194
16	6 38 55.02	2.6721	28 24 20.3	2.808	16	8 43 36.82	2.4812	22 34 47.2	11.342
17	6 41 35.32	2.6712	28 21 25.9	3.006	17	8 46 5.51	2.4752	22 23 22.3	11.488
18	6 44 15.56	2.6701	28 18 19.6	3.203	18	8 48 33.84	2.4691	22 11 48.7	11.632
19	6 46 55.73	2.6689	28 15 1.5	3.399	19	8 51 1.80	2.4630	22 0 6.5	11.774
20	6 49 35.83	2.6676	28 11 31.7	3.595	20	8 53 29.40	2.4570	21 48 15.8	11.914
21	6 52 15.84	2.6660	28 7 50.1	3.791	21	8 55 56.64	2.4509	21 36 16.8	12.052
22	6 54 55.75	2.6643	28 3 56.7	3.986	22	8 58 23.51	2.4447	21 24 9.5	12.190
23	6 57 35.56	2.6625	27 59 51.7	4.181	23	9 0 50.01	2.4386	21 11 54.0	12.325
24	7 0 15.25	2.6604	N.27 55 35.0	4.376	24	9 3 16.14	2.4324	N.20 59 30.5	12.458

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	TUESDAY 25.					**THURSDAY 27.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	9 3 16.14	2.4324	N.20 59 30.5	12.458	0	10 53 22.58	2.1733	N. 9 2 47.1	16.682
1	9 5 41.90	2.4263	20 46 59.0	12.591	1	10 55 32.86	2.1693	8 46 4.9	16.724
2	9 8 7.29	2.4202	20 34 19.6	12.721	2	10 57 42.90	2.1654	8 29 20.2	16.764
3	9 10 32.32	2.4140	20 21 32.5	12.848	3	10 59 52.71	2.1616	8 12 33.2	16.802
4	9 12 56.97	2.4078	20 8 37.8	12.975	4	11 2 2.29	2.1579	7 55 43.9	16.840
5	9 15 21.25	2.4017	19 55 35.5	13.100	5	11 4 11.66	2.1543	7 38 52.4	16.875
6	9 17 45.17	2.3956	19 42 25.8	13.222	6	11 6 20.81	2.1507	7 21 58.9	16.908
7	9 20 8.72	2.3894	19 29 8.8	13.343	7	11 8 29.75	2.1472	7 5 3.5	16.939
8	9 22 31.90	2.3833	19 15 44.6	13.462	8	11 10 38.48	2.1438	6 48 6.2	16.969
9	9 24 54.72	2.3772	19 2 13.3	13.580	9	11 12 47.01	2.1405	6 31 7.2	16.997
10	9 27 17.17	2.3712	18 48 35.0	13.695	10	11 14 55.34	2.1372	6 14 6.6	17.023
11	9 29 39.26	2.3651	18 34 49.9	13.808	11	11 17 3.47	2.1339	5 57 4.5	17.046
12	9 32 0.98	2.3590	18 20 58.0	13.920	12	11 19 11.41	2.1308	5 40 1.1	17.068
13	9 34 22.34	2.3530	18 6 59.5	14.029	13	11 21 19.17	2.1278	5 22 56.3	17.089
14	9 36 43.34	2.3471	17 52 54.5	14.137	14	11 23 26.75	2.1249	5 5 50.4	17.107
15	9 39 3.99	2.3412	17 38 43.0	14.244	15	11 25 34.16	2.1221	4 48 43.4	17.125
16	9 41 24.28	2.3352	17 24 25.2	14.348	16	11 27 41.40	2.1193	4 31 35.4	17.141
17	9 43 44.22	2.3293	17 10 1.2	14.450	17	11 29 48.48	2.1166	4 14 26.5	17.154
18	9 46 3.80	2.3234	16 55 31.2	14.550	18	11 31 55.40	2.1140	3 57 16.9	17.166
19	9 48 23.03	2.3176	16 40 55.2	14.649	19	11 34 2.16	2.1115	3 40 6.6	17.177
20	9 50 41.92	2.3119	16 26 13.3	14.746	20	11 36 8.78	2.1091	3 22 55.7	17.186
21	9 53 0.46	2.3062	16 11 25.7	14.840	21	11 38 15.25	2.1067	3 5 44.4	17.192
22	9 55 18.66	2.3005	15 56 32.5	14.933	22	11 40 21.58	2.1044	2 48 32.7	17.197
23	9 57 36.52	2.2948	N.15 41 33.8	15.024	23	11 42 27.78	2.1022	N. 2 31 20.8	17.200
	WEDNESDAY 26.					**FRIDAY 28.**			
0	9 59 54.04	2.2892	N.15 26 29.6	15.113	0	11 44 33.84	2.1000	N. 2 14 8.7	17.202
1	10 2 11.23	2.2837	15 11 20.2	15.200	1	11 46 39.78	2.0980	1 56 56.6	17.202
2	10 4 28.09	2.2782	14 56 5.6	15.285	2	11 48 45.60	2.0961	1 39 44.5	17.201
3	10 6 44.62	2.2728	14 40 46.0	15.368	3	11 50 51.31	2.0942	1 22 32.5	17.198
4	10 9 0.83	2.2675	14 25 21.4	15.450	4	11 52 56.91	2.0924	1 5 20.8	17.192
5	10 11 16.72	2.2621	14 9 52.0	15.529	5	11 55 2.40	2.0906	0 48 9.5	17.185
6	10 13 32.28	2.2568	13 54 17.9	15.607	6	11 57 7.78	2.0889	0 30 58.6	17.177
7	10 15 47.53	2.2517	13 38 39.2	15.683	7	11 59 13.07	2.0875	N. 0 13 48.3	17.167
8	10 18 2.48	2.2466	13 22 56.0	15.757	8	12 1 18.28	2.0861	S. 0 3 21.4	17.156
9	10 20 17.12	2.2415	13 7 8.4	15.828	9	12 3 23.40	2.0846	0 20 30.4	17.143
10	10 22 31.46	2.2365	12 51 16.6	15.898	10	12 5 28.43	2.0833	0 37 38.6	17.128
11	10 24 45.50	2.2315	12 35 20.7	15.966	11	12 7 33.39	2.0821	0 54 45.8	17.112
12	10 26 59.24	2.2266	12 19 20.7	16.032	12	12 9 38.28	2.0809	1 11 52.0	17.094
13	10 29 12.69	2.2218	12 3 16.8	16.097	13	12 11 43.10	2.0798	1 28 57.1	17.075
14	10 31 25.85	2.2170	11 47 9.1	16.159	14	12 13 47.86	2.0788	1 46 1.0	17.053
15	10 33 38.73	2.2123	11 30 57.7	16.220	15	12 15 52.56	2.0779	2 3 3.5	17.030
16	10 35 51.33	2.2077	11 14 42.7	16.279	16	12 17 57.21	2.0771	2 20 4.6	17.007
17	10 38 3.66	2.2032	10 58 24.2	16.336	17	12 20 1.81	2.0763	2 37 4.3	16.981
18	10 40 15.71	2.1987	10 42 2.4	16.391	18	12 22 6.36	2.0755	2 54 2.3	16.953
19	10 42 27.50	2.1943	10 25 37.3	16.444	19	12 24 10.87	2.0749	3 10 58.6	16.924
20	10 44 39.03	2.1899	10 9 9.1	16.496	20	12 26 15.35	2.0745	3 27 53.2	16.894
21	10 46 50.29	2.1856	9 52 37.8	16.546	21	12 28 19.81	2.0741	3 44 45.9	16.862
22	10 49 1.30	2.1814	9 36 3.6	16.593	22	12 30 24.24	2.0737	4 1 36.7	16.829
23	10 51 12.06	2.1773	9 19 26.7	16.638	23	12 32 28.65	2.0733	4 18 25.4	16.794
24	10 53 22.58	2.1733	N. 9 2 47.1	16.682	24	12 34 33.04	2.0731	S. 4 35 12.0	16.758

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 34 33.04	2.0731	S. 4 35 12.0	16.758
1	12 36 37.42	2.0729	4 51 56.4	16.720
2	12 38 41.79	2.0728	5 8 38.4	16.680
3	12 40 46.16	2.0728	5 25 18.0	16.639
4	12 42 50.53	2.0729	5 41 55.1	16.597
5	12 44 54.91	2.0730	5 58 29.6	16.553
6	12 46 59.29	2.0732	6 15 1.5	16.508
7	12 49 3.69	2.0735	6 31 30.6	16.462
8	12 51 8.11	2.0738	6 47 56.9	16.413
9	12 53 12.55	2.0742	7 4 20.2	16.363
10	12 55 17.02	2.0747	7 20 40.5	16.313
11	12 57 21.52	2.0752	7 36 57.7	16.261
12	12 59 26.05	2.0758	7 53 11.8	16.207
13	13 1 30.62	2.0766	8 9 22.6	16.152
14	13 3 35.24	2.0774	8 25 30.0	16.095
15	13 5 39.91	2.0782	8 41 34.0	16.037
16	13 7 44.63	2.0791	8 57 34.5	15.978
17	13 9 49.40	2.0800	9 13 31.4	15.917
18	13 11 54.23	2.0810	9 29 24.6	15.855
19	13 13 59.12	2.0821	9 45 14.0	15.792
20	13 16 4.08	2.0833	10 0 59.6	15.728
21	13 18 9.11	2.0845	10 16 41.3	15.662
22	13 20 14.22	2.0857	10 32 19.0	15.594
23	13 22 19.40	2.0870	S. 10 47 52.6	15.526

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 24 24.66	2.0884	S. 11 3 22.1	15.456
1	13 26 30.01	2.0898	11 18 47.3	15.384
2	13 28 35.44	2.0912	11 34 8.2	15.312
3	13 30 40.96	2.0928	11 49 24.8	15.239
4	13 32 46.58	2.0945	12 4 36.9	15.163
5	13 34 52.30	2.0962	12 19 44.4	15.087
6	13 36 58.12	2.0979	12 34 47.3	15.009
7	13 39 4.04	2.0996	12 49 45.5	14.931
8	13 41 10.07	2.1014	13 4 39.0	14.851
9	13 43 16.21	2.1033	13 19 27.6	14.769
10	13 45 22.46	2.1052	13 34 11.3	14.687
11	13 47 28.83	2.1071	13 48 50.1	14.604
12	13 49 35.31	2.1091	14 3 23.8	14.519
13	13 51 41.92	2.1112	14 17 52.4	14.433
14	13 53 48.65	2.1133	14 32 15.8	14.346
15	13 55 55.51	2.1154	14 46 33.9	14.257
16	13 58 2.50	2.1176	15 0 46.6	14.167
17	14 0 9.62	2.1198	15 14 54.0	14.077
18	14 2 16.87	2.1220	15 28 55.9	13.985
19	14 4 24.26	2.1243	15 42 52.2	13.892
20	14 6 31.79	2.1267	15 56 42.9	13.798
21	14 8 39.46	2.1291	16 10 28.0	13.703
22	14 10 47.28	2.1315	16 24 7.3	13.607
23	14 12 55.24	2.1339	16 37 40.8	13.510
24	14 15 3.34	2.1363	S. 16 51 8.5	13.412

MONDAY, OCTOBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 15 3.34	2.1363	S. 16 51 8.5	13.412

PHASES OF THE MOON.

		d	h	m
☽ First Quarter . .	Sept.	6	13	2.9
○ Full Moon		14	16	21.5
☾ Last Quarter		22	0	32.1
● New Moon		28	17	43.9

		d	h
☾ Apogee	Sept.	9	20.2
☾ Perigee		25	17.5

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	22° 33′ 52″	2578	24° 13′ 17″	2591	25° 52′ 24″	2607	27° 31′ 10″	2622
	Antares	E.	66 47 57	2254	65 0 50	2270	63 14 7	2286	61 27 47	2302
2	Sun	W.	35 39 29	2707	37 15 59	2725	38 52 5	2744	40 27 46	2763
	Antares	E.	52 42 3	2386	50 58 8	2403	49 14 37	2421	47 31 32	2438
	α Aquilæ	E.	103 25 30	3243	102 0 12	3250	100 35 2	3258	99 10 1	3268
3	Sun	W.	48 20 3	2858	49 53 16	2877	51 26 4	2896	52 58 28	2916
	Antares	E.	39 2 24	2528	37 21 50	2546	35 41 41	2564	34 1 57	2583
	α Aquilæ	E.	92 8 20	3336	90 44 50	3354	89 21 41	3372	87 58 53	3392
4	Sun	W.	60 34 24	3010	62 4 24	3028	63 34 2	3047	65 3 17	3064
	Saturn	W.	20 35 40	2793	22 10 17	2800	23 44 45	2808	25 19 2	2818
	α Aquilæ	E.	81 10 50	3506	79 50 32	3532	78 30 43	3558	77 11 23	3586
5	Sun	W.	72 24 12	3150	73 51 21	3166	75 18 11	3182	76 44 42	3197
	Saturn	W.	33 7 9	2874	34 40 1	2886	36 12 38	2898	37 44 59	2911
	Spica	W.	32 53 20	2801	34 27 47	2815	36 1 55	2830	37 35 44	2844
	α Aquilæ	E.	70 42 36	3741	69 26 32	3775	68 11 4	3812	66 56 14	3849
	Fomalhaut	E.	95 6 21	3033	93 36 49	3047	92 7 34	3060	90 38 36	3075
6	Sun	W.	83 52 52	3268	85 17 41	3282	86 42 14	3294	88 6 33	3305
	Saturn	W.	45 22 54	2969	46 53 45	2980	48 24 23	2991	49 54 47	3001
	Spica	W.	45 20 23	2909	46 52 30	2922	48 24 21	2934	49 55 57	2944
	α Aquilæ	E.	60 52 8	4063	59 41 30	4112	58 31 40	4163	57 22 39	4218
	Fomalhaut	E.	83 18 6	3145	81 50 51	3158	80 23 52	3172	78 57 9	3186
7	Sun	W.	95 4 52	3358	96 27 56	3367	97 50 50	3376	99 13 34	3384
	Spica	W.	57 30 42	2993	59 1 3	3001	60 31 14	3009	62 1 15	3017
	Saturn	W.	57 23 46	3047	58 53 0	3055	60 22 5	3063	61 51 0	3069
	α Aquilæ	E.	51 51 14	4541	50 47 58	4619	49 45 50	4702	48 44 52	4791
	Fomalhaut	E.	71 47 37	3253	70 22 30	3266	68 57 39	3279	67 33 3	3293
	α Pegasi	E.	93 41 5	3269	92 16 17	3276	90 51 38	3284	89 27 8	3292
8	Sun	W.	106 5 7	3417	107 27 4	3422	108 48 56	3427	110 10 42	3431
	Spica	W.	69 29 13	3047	70 58 27	3052	72 27 36	3056	73 56 39	3060
	Saturn	W.	69 13 36	3099	70 41 47	3104	72 9 52	3108	73 37 52	3112
	Antares	W.	23 34 56	3047	25 4 10	3052	26 33 18	3056	28 2 21	3060
	Fomalhaut	E.	60 34 1	3362	59 11 1	3376	57 48 17	3391	56 25 50	3407
	α Pegasi	E.	82 26 50	3328	81 3 11	3336	79 39 41	3343	78 16 19	3349
9	Sun	W.	116 58 32	3445	118 19 58	3446	119 41 23	3446	121 2 47	3447
	Spica	W.	81 20 55	3073	82 49 38	3073	84 18 20	3074	85 47 1	3074
	Saturn	W.	80 56 55	3124	82 24 36	3124	83 52 16	3125	85 19 55	3126
	Antares	W.	35 26 36	3073	36 55 19	3073	38 24 1	3074	39 52 42	3075
	Fomalhaut	E.	49 38 17	3497	48 17 49	3517	46 57 44	3540	45 38 4	3565
	α Pegasi	E.	71 21 24	3384	69 58 49	3391	68 36 22	3398	67 14 3	3405
10	Saturn	W.	92 38 11	3122	94 5 54	3120	95 33 39	3118	97 1 27	3115
	Antares	W.	47 16 9	3071	48 44 54	3069	50 13 42	3066	51 42 33	3064
	α Pegasi	E.	60 24 41	3447	59 3 18	3457	57 42 6	3469	56 21 7	3480
	Mars	E.	98 45 9	3129	97 17 35	3126	95 49 57	3124	94 22 16	3119

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	29° 9′ 35″	2638	30° 47′ 38″	2655	32° 25′ 18″	2672	34° 2′ 35″	2689
	Antares	E.	59 41 50	2318	57 56 17	2335	56 11 8	2351	54 26 23	2368
2	Sun	W.	42 3 3	2782	43 37 55	2800	45 12 23	2820	46 46 25	2838
	Antares	E.	45 48 52	2456	44 6 37	2475	42 24 48	2492	40 43 23	2510
	α Aquilæ	E.	97 45 12	3279	96 20 36	3291	94 56 14	3305	93 32 8	3320
3	Sun	W.	54 30 27	2935	56 2 2	2954	57 33 13	2973	59 4 0	2991
	Antares	E.	32 22 38	2600	30 43 43	2618	29 5 13	2636	27 27 7	2654
	α Aquilæ	E.	86 36 27	3413	85 14 25	3434	83 52 47	3457	82 31 35	3481
4	Sun	W.	66 32 11	3082	68 0 43	3100	69 28 53	3116	70 56 43	3133
	Saturn	W.	26 53 7	2626	28 26 59	2638	30 0 37	2649	31 34 1	2662
	α Aquilæ	E.	75 52 33	3614	74 34 14	3645	73 16 28	3676	71 59 15	3708
5	Sun	W.	78 10 55	3212	79 36 50	3227	81 2 27	3241	82 27 48	3255
	Saturn	W.	39 17 4	2923	40 48 54	2935	42 20 29	2946	43 51 49	2958
	Spica	W.	39 9 15	2858	40 42 28	2872	42 15 23	2885	43 48 1	2898
	α Aquilæ	E.	65 42 2	3888	64 28 30	3929	63 15 40	3971	62 3 32	4016
	Fomalhaut	E.	89 9 56	3089	87 41 33	3103	86 13 27	3117	84 45 38	3131
6	Sun	W.	89 30 39	3317	90 54 31	3328	92 18 10	3338	93 41 37	3349
	Saturn	W.	51 24 59	3011	52 54 58	3021	54 24 45	3030	55 54 21	3039
	Spica	W.	51 27 20	2955	52 58 29	2965	54 29 26	2975	56 0 10	2985
	α Aquilæ	E.	56 14 30	4276	55 7 15	4335	54 0 55	4400	52 55 34	4468
	Fomalhaut	E.	77 30 43	3198	76 4 32	3213	74 38 38	3226	73 13 0	3239
7	Sun	W.	100 36 9	3392	101 58 35	3399	103 20 53	3406	104 43 3	3411
	Spica	W.	63 31 7	3024	65 0 50	3030	66 30 25	3037	67 59 52	3042
	Saturn	W.	63 19 47	3077	64 48 25	3082	66 16 56	3089	67 45 19	3094
	α Aquilæ	E.	47 45 8	4886	46 46 42	4990	45 49 39	5102	44 54 3	5222
	Fomalhaut	E.	66 8 43	3306	64 44 39	3319	63 20 50	3333	61 57 17	3348
	α Pegasi	E.	88 2 47	3300	86 38 35	3306	85 14 31	3314	83 50 36	3322
8	Sun	W.	111 32 23	3435	112 54 0	3438	114 15 34	3441	115 37 4	3443
	Spica	W.	75 25 37	3064	76 54 31	3066	78 23 22	3069	79 52 10	3071
	Saturn	W.	75 5 47	3114	76 33 39	3118	78 1 27	3120	79 29 12	3122
	Antares	W.	29 31 19	3064	31 0 13	3066	32 29 4	3069	33 57 51	3071
	Fomalhaut	E.	55 3 41	3423	53 41 50	3440	52 20 19	3457	50 59 7	3477
	α Pegasi	E.	76 53 4	3356	75 29 57	3363	74 6 58	3370	72 44 7	3377
9	Sun	W.	122 24 10	3447	123 45 33	3446	125 6 57	3446	126 28 22	3445
	Spica	W.	87 15 42	3074	88 44 23	3074	90 13 4	3073	91 41 46	3073
	Saturn	W.	86 47 33	3126	88 15 11	3125	89 42 50	3124	91 10 30	3124
	Antares	W.	41 21 22	3074	42 50 3	3074	44 18 44	3073	45 47 26	3073
	Fomalhaut	E.	44 18 51	3591	43 0 7	3620	41 41 54	3652	40 24 16	3687
	α Pegasi	E.	65 51 52	3413	64 29 50	3422	63 7 58	3430	61 46 15	3438
10	Saturn	W.	98 29 18	3112	99 57 13	3110	101 25 11	3105	102 53 14	3102
	Antares	W.	53 11 27	3061	54 40 24	3057	56 9 26	3054	57 38 32	3050
	α Pegasi	E.	55 0 20	3492	53 39 47	3506	52 19 29	3520	50 59 27	3535
	Mars	E.	92 54 30	3116	91 26 40	3112	89 58 45	3108	88 30 45	3103

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	Antares	W.	59° 7′ 43″	3046	60° 36′ 59″	3041	62° 6′ 21″	3036	63° 35′ 49″	3031
	α Pegasi	E.	49 39 42	3554	48 20 17	3573	47 1 13	3595	45 42 33	3620
	Mars	E.	87 2 39	3099	85 34 28	3093	84 6 10	3087	82 37 45	3082
	α Arietis	E.	89 20 27	3078	87 51 50	3073	86 23 7	3069	84 54 19	3063
12	Antares	W.	71 4 49	3002	72 34 59	2995	74 5 18	2989	75 35 45	2982
	Mars	E.	75 13 55	3052	73 44 46	3044	72 15 28	3038	70 46 2	3030
	α Arietis	E.	77 28 40	3035	75 59 11	3030	74 29 35	3023	72 59 51	3017
	Aldebaran	E.	108 16 27	3080	106 47 53	3072	105 19 9	3065	103 50 16	3057
13	Antares	W.	83 10 12	2945	84 41 34	2938	86 13 5	2930	87 44 46	2921
	α Aquilæ	W.	43 48 9	5152	44 43 7	5023	45 39 44	4906	46 37 54	4798
	Mars	E.	63 16 40	2995	61 46 21	2987	60 15 52	2980	58 45 14	2972
	α Arietis	E.	65 29 11	2984	63 58 38	2977	62 27 57	2970	60 57 7	2963
	Aldebaran	E.	96 23 26	3017	94 53 34	3009	93 23 32	3001	91 53 20	2993
14	α Aquilæ	W.	51 49 14	4366	52 55 6	4296	54 2 2	4232	55 9 58	4172
	Mars	E.	51 9 43	2935	49 38 9	2929	48 6 27	2923	46 34 37	2916
	α Arietis	E.	53 20 50	2931	51 49 10	2924	50 17 22	2918	48 45 26	2912
	Aldebaran	E.	84 19 47	2952	82 48 34	2944	81 17 11	2936	79 45 38	2927
15	α Aquilæ	W.	61 2 52	3934	62 15 47	3884	63 29 23	3846	64 43 38	3809
	Fomalhaut	W.	31 9 44	3792	32 24 55	3702	33 41 40	3622	34 59 51	3549
	Mars	E.	38 53 27	2888	37 20 53	2885	35 48 15	2882	34 15 33	2880
	α Arietis	E.	41 3 59	2887	39 31 24	2883	37 58 44	2880	36 26 0	2879
	Aldebaran	E.	72 5 23	2890	70 32 51	2883	69 0 10	2876	67 27 20	2869
	Jupiter	E.	97 40 37	2873	96 7 43	2863	94 34 37	2855	93 1 20	2845
16	α Aquilæ	W.	71 3 36	3659	72 21 7	3634	73 39 5	3610	74 57 28	3587
	Fomalhaut	W.	41 48 15	3282	43 12 47	3242	44 38 6	3206	46 4 8	3172
	Aldebaran	E.	59 41 4	2838	58 7 26	2833	56 33 41	2828	54 59 49	2824
	Jupiter	E.	85 11 59	2801	83 37 32	2792	82 2 54	2783	80 28 4	2775
	Pollux	E.	102 42 54	2743	101 7 11	2734	99 31 16	2725	97 55 10	2716
17	α Aquilæ	W.	81 34 57	3498	82 55 23	3483	84 16 6	3470	85 37 4	3458
	Fomalhaut	W.	53 23 41	3034	54 53 12	3010	56 23 12	2989	57 53 39	2969
	Aldebaran	E.	47 9 16	2809	45 35 0	2808	44 0 43	2808	42 26 26	2810
	Jupiter	E.	72 31 5	2732	70 55 7	2724	69 18 59	2716	67 42 40	2707
	Pollux	E.	89 51 44	2673	88 14 28	2665	86 37 1	2656	84 59 22	2647
18	α Aquilæ	W.	92 24 50	3415	93 46 50	3408	95 8 57	3405	96 31 8	3402
	Fomalhaut	W.	65 31 52	2881	67 4 35	2866	68 37 38	2852	70 10 59	2838
	α Pegasi	W.	44 49 8	3180	46 15 41	3140	47 43 2	3104	49 11 7	3070
	Jupiter	E.	59 38 23	2668	58 1 0	2660	56 23 27	2652	54 45 43	2646
	Pollux	E.	76 48 14	2605	75 9 26	2596	73 30 26	2588	71 51 15	2580
19	Fomalhaut	W.	78 2 1	2775	79 37 1	2765	81 12 15	2754	82 47 43	2744
	α Pegasi	W.	56 41 1	2933	58 12 38	2910	59 44 44	2889	61 17 17	2869
	Jupiter	E.	46 34 41	2611	44 56 1	2605	43 17 13	2599	41 38 17	2594
	Pollux	E.	63 32 26	2538	61 52 6	2530	60 11 34	2521	58 30 50	2513
	Regulus	E.	100 19 49	2539	98 39 30	2531	96 59 0	2522	95 18 18	2514
	Sun	E.	128 26 15	2863	126 53 9	2855	125 19 52	2845	123 46 23	2837

GREENWICH MEAN TIME.

LUNAR DISTANCES.

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11	Antares	W.	65° 5′ 23″	3026	66° 35′ 3″	3020	68° 4′ 51″	3014	69° 34′ 46″	3008
	α Pegasi	E.	44 24 20	3646	43 6 35	3677	41 49 23	3709	40 32 46	3747
	MARS	E.	81 9 14	3077	79 40 36	3070	78 11 50	3064	76 42 56	3058
	α Arietis	E.	83 25 24	3058	81 56 23	3053	80 27 16	3047	78 58 2	3041
12	Antares	W.	77 6 20	2975	78 37 4	2968	80 7 57	2960	81 39 0	2953
	MARS	E.	69 16 27	3023	67 46 43	3017	66 16 51	3009	64 46 50	3002
	α Arietis	E.	71 29 59	3010	69 59 59	3004	68 29 51	2997	66 59 35	2991
	Aldebaran	E.	102 21 14	3049	100 52 2	3041	99 22 40	3033	97 53 8	3025
13	Antares	W.	89 16 38	2913	90 48 40	2905	92 20 52	2897	93 53 15	2889
	α Aquilæ	W.	47 37 32	4697	48 38 34	4606	49 40 54	4519	50 44 29	4440
	MARS	E.	57 14 26	2965	55 43 29	2958	54 12 23	2950	52 41 8	2942
	α Arietis	E.	59 26 8	2957	57 55 1	2950	56 23 46	2943	54 52 22	2937
	Aldebaran	E.	90 22 58	2985	88 52 26	2976	87 21 43	2968	85 50 50	2960
14	α Aquilæ	W.	56 18 51	4116	57 28 37	4063	58 39 15	4014	59 50 41	3968
	MARS	E.	45 2 38	2909	43 30 31	2904	41 58 17	2898	40 25 55	2893
	α Arietis	E.	47 13 22	2906	45 41 11	2901	44 8 53	2896	42 36 29	2891
	Aldebaran	E.	78 13 54	2920	76 42 1	2912	75 9 58	2905	73 37 45	2898
15	α Aquilæ	W.	65 58 31	3775	67 13 59	3744	68 30 0	3713	69 46 33	3685
	Fomalhaut	W.	36 19 21	3485	37 40 2	3427	39 1 48	3374	40 24 34	3326
	MARS	E.	32 42 48	2879	31 10 2	2880	29 37 17	2881	28 4 34	2884
	α Arietis	E.	34 53 14	2877	33 20 26	2878	31 47 39	2880	30 14 54	2883
	Aldebaran	E.	65 54 21	2862	64 21 14	2856	62 47 58	2850	61 14 35	2844
	JUPITER	E.	91 27 51	2836	89 54 10	2828	88 20 18	2818	86 46 14	2810
16	α Aquilæ	W.	76 16 16	3567	77 35 26	3548	78 54 57	3530	80 14 48	3514
	Fomalhaut	W.	47 30 51	3140	48 58 12	3110	50 26 9	3083	51 54 39	3057
	Aldebaran	E.	53 25 52	2819	51 51 49	2816	50 17 42	2812	48 43 30	2811
	JUPITER	E.	78 53 3	2766	77 17 51	2757	75 42 27	2749	74 6 52	2740
	Pollux	E.	96 18 52	2707	94 42 22	2699	93 5 41	2690	91 28 48	2682
17	α Aquilæ	W.	86 58 15	3447	88 19 38	3437	89 41 13	3429	91 2 57	3421
	Fomalhaut	W.	59 24 31	2950	60 55 47	2931	62 27 27	2913	63 59 29	2897
	Aldebaran	E.	40 52 11	2812	39 17 59	2817	37 43 53	2823	36 9 55	2831
	JUPITER	E.	66 6 10	2699	64 29 29	2692	62 52 38	2684	61 15 36	2675
	Pollux	E.	83 21 31	2639	81 43 29	2631	80 5 16	2622	78 26 51	2613
18	α Aquilæ	W.	97 53 22	3400	99 15 38	3400	100 37 55	3400	102 0 11	3402
	Fomalhaut	W.	71 44 38	2825	73 18 34	2811	74 52 47	2799	76 27 16	2787
	α Pegasi	W.	50 39 53	3039	52 9 18	3009	53 39 19	2982	55 9 54	2957
	JUPITER	E.	53 7 50	2638	51 29 47	2631	49 51 34	2624	48 13 12	2618
	Pollux	E.	70 11 52	2572	68 32 18	2563	66 52 32	2555	65 12 35	2546
19	Fomalhaut	W.	84 23 25	2734	85 59 20	2725	87 35 27	2716	89 11 46	2707
	α Pegasi	W.	62 50 16	2849	64 23 40	2831	65 57 27	2815	67 31 36	2798
	JUPITER	E.	39 59 14	2589	38 20 4	2585	36 40 48	2580	35 1 26	2577
	Pollux	E.	56 49 55	2504	55 8 48	2496	53 27 29	2488	51 45 59	2480
	Regulus	E.	93 37 24	2505	91 56 18	2497	90 15 1	2489	88 33 32	2480
	SUN	E.	122 12 43	2827	120 38 50	2818	119 4 46	2809	117 30 30	2800

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LUNAR DISTANCES.

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20	α Pegasi	W.	69° 6′ 7″	2782	70° 40′ 58″	2767	72° 16′ 9″	2753	73° 51′ 39″	2739
	Mars	W.	27 45 6	2572	29 24 39	2551	31 4 42	2531	32 45 12	2513
	α Arietis	W.	25 37 37	2632	27 15 48	2606	28 54 35	2583	30 33 54	2561
	Pollux	E.	50 4 17	2471	48 22 23	2463	46 40 18	2455	44 58 1	2447
	Regulus	E.	86 51 51	2472	85 9 58	2463	83 27 53	2455	81 45 36	2447
	Venus	E.	97 50 53	2680	96 18 9	2671	94 45 13	2662	93 12 5	2652
	Sun	E.	115 56 2	2791	114 21 22	2782	112 46 30	2772	111 11 26	2764
21	α Pegasi	W.	81 53 24	2680	83 30 31	2669	85 7 52	2659	86 45 26	2650
	Mars	W.	41 13 29	2438	42 56 10	2425	44 39 9	2412	46 22 26	2401
	α Arietis	W.	38 57 2	2478	40 38 46	2465	42 20 49	2451	44 3 11	2439
	Pollux	E.	36 23 44	2406	34 40 18	2398	32 56 40	2390	31 12 51	2383
	Regulus	E.	73 11 14	2404	71 27 45	2396	69 44 5	2387	68 0 12	2380
	Venus	E.	85 23 23	2806	83 49 3	2797	82 14 31	2788	80 39 47	2778
	Sun	E.	103 13 8	2718	101 36 52	2709	100 0 24	2700	98 23 44	2691
22	Mars	W.	55 3 1	2345	56 47 55	2335	58 33 4	2325	60 18 27	2315
	α Arietis	W.	52 39 12	2382	54 23 12	2373	56 7 26	2363	57 51 54	2353
	Regulus	E.	59 17 54	2339	57 32 52	2331	55 47 38	2324	54 2 13	2315
	Venus	E.	72 43 5	2733	71 7 9	2724	69 31 1	2716	67 54 42	2707
	Sun	E.	90 17 25	2647	88 39 34	2638	87 1 31	2629	85 23 16	2621
23	Mars	W.	69 8 52	2270	70 55 36	2261	72 42 33	2253	74 29 42	2245
	α Arietis	W.	66 37 36	2309	68 23 23	2301	70 9 21	2293	71 55 31	2286
	Aldebaran	W.	36 32 34	2470	38 14 29	2448	39 56 55	2428	41 39 50	2410
	Regulus	E.	45 12 22	2280	43 25 53	2273	41 39 14	2267	39 52 26	2260
	Venus	E.	59 50 15	2666	58 12 49	2657	56 35 12	2650	54 57 25	2642
	Sun	E.	77 9 13	2580	75 29 51	2573	73 50 19	2565	72 10 36	2558
24	Mars	W.	83 28 15	2210	85 16 28	2203	87 4 51	2197	88 53 23	2192
	α Arietis	W.	80 48 57	2252	82 36 7	2246	84 23 26	2241	86 10 53	2236
	Aldebaran	W.	50 20 17	2338	52 5 21	2327	53 50 41	2317	55 36 16	2307
	Venus	E.	46 46 2	2608	45 7 18	2603	43 28 27	2597	41 49 28	2592
	Sun	E.	63 49 38	2525	62 8 59	2519	60 28 12	2513	58 47 17	2508
25	Aldebaran	W.	64 27 18	2270	66 14 1	2266	68 0 51	2261	69 47 48	2256
	Jupiter	W.	37 23 48	2267	39 10 36	2260	40 57 35	2253	42 44 44	2247
	Venus	E.	33 32 51	2570	31 53 15	2566	30 13 34	2564	28 33 50	2561
	Sun	E.	50 21 3	2487	48 39 32	2484	46 57 56	2481	45 16 16	2479
26	Aldebaran	W.	78 43 47	2246	80 31 6	2245	82 18 26	2245	84 5 46	2247
	Jupiter	W.	51 42 5	2232	53 29 45	2231	55 17 27	2230	57 5 10	2230
	Pollux	W.	34 59 13	2178	36 48 13	2178	38 37 14	2178	40 26 14	2179
	Sun	E.	36 47 22	2475	35 5 33	2475	33 23 44	2476	31 41 57	2478
27	Jupiter	W.	66 3 24	2239	67 50 53	2243	69 38 16	2247	71 25 33	2252
	Pollux	W.	49 30 35	2192	51 19 14	2197	53 7 46	2202	54 56 11	2206
	Sun	E.	23 13 52	2494	21 32 30	2498	19 51 14	2504	18 10 6	2510
30	Sun	W.	16 26 26	2744	18 2 7	2760	19 37 28	2775	21 12 28	2791
	Antares	E.	44 39 22	2422	42 56 18	2436	41 13 35	2450	39 31 12	2466
	α Aquilæ	E.	96 48 13	3942	95 22 53	3951	93 57 44	3962	92 32 48	3975

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P.L. of Diff.	XV$^{\text{h}}$.	P.L. of Diff.	XVIII$^{\text{h}}$.	P.L. of Diff.	XXI$^{\text{h}}$.	P.L. of Diff.
20	α Pegasi	W.	75° 27′ 27″	2796	77° 3′ 32″	2713	78° 39′ 54″	2702	80° 16′ 31″	2690
	Mars	W.	34 26 7	2496	36 7 26	2481	37 49 6	2466	39 31 7	2451
	α Arietis	W.	32 13 42	2542	33 53 57	2525	35 34 36	2508	37 15 38	2492
	Pollux	E.	43 15 33	2438	41 32 53	2431	39 50 2	2422	38 6 59	2414
	Regulus	E.	80 3 8	2438	78 20 27	2430	76 37 35	2421	74 54 30	2413
	Venus	E.	91 38 44	2642	90 5 11	2634	88 31 27	2625	86 57 31	2615
	Sun	E.	109 36 11	2755	108 0 44	2745	106 25 4	2736	104 49 12	2727
21	α Pegasi	W.	88 23 13	2642	90 1 11	2633	91 39 21	2626	93 17 41	2618
	Mars	W.	48 6 0	2389	49 49 51	2377	51 33 59	2366	53 18 22	2355
	α Arietis	W.	45 45 50	2427	47 28 46	2415	49 11 59	2404	50 55 28	2394
	Pollux	E.	29 28 52	2375	27 44 42	2368	26 0 22	2362	24 15 52	2354
	Regulus	E.	66 16 8	2371	64 31 52	2363	62 47 24	2355	61 2 45	2347
	Venus	E.	79 4 50	2769	77 29 41	2760	75 54 21	2751	74 18 49	2742
	Sun	E.	96 46 52	2682	95 9 48	2673	93 32 32	2664	91 55 4	2656
22	Mars	W.	62 4 5	2305	63 49 57	2296	65 36 2	2287	67 22 21	2279
	α Arietis	W.	59 36 36	2344	61 21 31	2335	63 6 40	2326	64 52 2	2317
	Regulus	E.	52 16 36	2308	50 30 48	2301	48 44 50	2294	46 58 41	2287
	Venus	E.	66 18 11	2696	64 41 29	2689	63 4 35	2681	61 27 30	2674
	Sun	E.	83 44 50	2612	82 6 13	2604	80 27 24	2596	78 48 24	2588
23	Mars	W.	76 17 3	2237	78 4 35	2230	79 52 18	2223	81 40 11	2216
	α Arietis	W.	73 41 51	2279	75 28 22	2271	77 15 4	2264	79 1 56	2258
	Aldebaran	W.	43 23 11	2393	45 6 56	2378	46 51 3	2363	48 35 31	2350
	Regulus	E.	38 5 28	2255	36 18 22	2249	34 31 7	2244	32 43 45	2239
	Venus	E.	53 19 27	2635	51 41 20	2628	50 3 3	2621	48 24 37	2615
	Sun	E.	70 30 43	2551	68 50 41	2544	67 10 29	2538	65 30 8	2531
24	Mars	W.	90 42 3	2186	92 30 51	2182	94 19 46	2177	96 8 48	2174
	α Arietis	W.	87 58 27	2231	89 46 8	2227	91 33 56	2223	93 21 49	2219
	Aldebaran	W.	57 22 5	2298	59 8 7	2291	60 54 20	2283	62 40 44	2277
	Venus	E.	40 10 22	2586	38 31 8	2582	36 51 48	2577	35 12 22	2574
	Sun	E.	57 6 15	2503	55 25 6	2499	53 43 51	2494	52 2 30	2490
25	Aldebaran	W.	71 34 52	2253	73 22 0	2250	75 9 13	2248	76 56 29	2247
	Jupiter	W.	44 32 1	2243	46 19 24	2239	48 6 54	2236	49 54 28	2234
	Venus	E.	26 54 2	2560	25 14 12	2559	23 34 20	2558	21 54 27	2557
	Sun	E.	43 34 33	2477	41 52 47	2476	40 11 0	2475	38 29 11	2475
26	Aldebaran	W.	85 53 4	2248	87 40 20	2251	89 27 32	2253	91 14 40	2256
	Jupiter	W.	58 52 53	2231	60 40 35	2233	62 28 14	2234	64 15 51	2237
	Pollux	W.	42 15 13	2181	44 4 9	2184	45 53 2	2186	47 41 51	2189
	Sun	E.	30 0 13	2480	28 18 32	2482	26 36 54	2485	24 55 20	2489
27	Jupiter	W.	73 12 43	2258	74 59 45	2264	76 46 38	2270	78 33 22	2277
	Pollux	W.	56 44 29	2212	58 32 38	2219	60 20 37	2226	62 8 26	2233
	Sun	E.	16 29 6	2516	14 48 15	2524	13 7 35	2533	11 27 7	2541
30	Sun	W.	22 47 8	2808	24 21 26	2824	25 55 23	2841	27 28 58	2857
	Antares	E.	37 49 11	2481	36 7 31	2496	34 26 12	2512	32 45 15	2527
	α Aquilæ	E.	91 8 7	3289	89 43 43	3304	88 19 36	3321	86 55 49	3339

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Mon.	1	12 30 25.58	9.062	S. 3 17 14.0	−58.26	16 1.42	64.38	10 21.88	0.793
Tues.	2	12 34 3.20	9.074	3 40 31.3	58.16	16 1.70	64.43	10 40.76	0.781
Wed.	3	12 37 41.12	9.087	4 3 46.0	58.04	16 1.98	64.47	10 59.35	0.768
Thur.	4	12 41 19.36	9.101	4 26 57.6	−57.91	16 2.26	64.52	11 17.61	0.754
Frid.	5	12 44 57.94	9.116	4 50 6.0	57.77	16 2.55	64.58	11 35.53	0.739
Sat.	6	12 48 36.89	9.131	5 13 10.6	57.61	16 2.83	64.64	11 53.09	0.724
SUN.	7	12 52 16.21	9.147	5 36 11.2	−57.43	16 3.11	64.70	12 10.28	0.708
Mon.	8	12 55 55.93	9.164	5 59 7.3	57.24	16 3.40	64.76	12 27.06	0.691
Tues.	9	12 59 36.08	9.182	6 21 58.6	57.03	16 3.68	64.82	12 43.42	0.673
Wed.	10	13 3 16.65	9.200	6 44 44.7	−56.81	16 3.96	64 89	12 59.36	0.654
Thur.	11	13 6 57.69	9.220	7 7 25.3	56.57	16 4.24	64.96	13 14.83	0.635
Frid.	12	13 10 39.22	9.241	7 30 0.1	56.32	16 4.52	65.04	13 29.82	0.615
Sat.	13	13 14 21.24	9.262	7 52 28.6	−56.05	16 4.80	65.11	13 44.31	0.593
SUN.	14	13 18 3.79	9.284	8 14 50.6	55.77	16 5.08	65.19	13 58.28	0.570
Mon.	15	13 21 46.89	9.308	8 37 5.7	55.47	16 5.35	65.27	14 11.70	0.547
Tues.	16	13 25 30.55	9.332	8 59 13.6	−55.16	16 5.62	65.35	14 24.56	0.523
Wed.	17	13 29 14.80	9.357	9 21 13.8	54.84	16 5.89	65.44	14 36.82	0.498
Thur.	18	13 32 59.67	9.382	9 43 6.0	54.50	16 6.16	65.53	14 48.48	0.472
Frid.	19	13 36 45.16	9.409	10 4 49.9	−54.15	16 6.42	65.62	14 59.51	0.446
Sat.	20	13 40 31.31	9.437	10 26 25.0	53.77	16 6.69	65.71	15 9.89	0.418
SUN.	21	13 44 18.12	9.465	10 47 51.1	53.39	16 6.95	65.81	15 19.61	0.390
Mon.	22	13 48 5.61	9.493	11 9 7.6	−53.00	16 7.21	65.90	15 28.65	0.362
Tues.	23	13 51 53.80	9.523	11 30 14.2	52.58	16 7.47	66.00	15 36.99	0.333
Wed.	24	13 55 42.71	9.553	11 51 10.5	52.13	16 7.73	66.10	15 44.62	0.303
Thur.	25	13 59 32.34	9.583	12 11 56.1	−51.67	16 7.98	66.20	15 51.52	0.272
Frid.	26	14 3 22.71	9.614	12 32 30.5	51.20	16 8.24	66.31	15 57.69	0.241
Sat.	27	14 7 13.83	9.645	12 52 53.3	50.71	16 8.50	66.41	16 3.11	0.210
SUN.	28	14 11 5.71	9.677	13 13 4.1	−50.20	16 8.76	66.52	16 7.78	0.178
Mon.	29	14 14 58.35	9.709	13 33 2.5	49.67	16 9.01	66.63	16 11.68	0.146
Tues.	30	14 18 51.76	9.742	13 52 48.0	49.12	16 9.26	66.74	16 14.80	0.114
Wed.	31	14 22 45.96	9.775	14 12 20.1	48.55	16 9.52	66.85	16 17.16	0.082
Thur.	32	14 26 40.95	9.808	S. 14 31 38.6	−47.97	16 9.77	66.97	16 18.74	0.049

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.18$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Mon.	1	12 30 27.15	9.063	S. 3 17 24.1	–58.28	10 22.01	0.793	12 40 49.16
Tues.	2	12 34 4.81	9.075	3 40 41.7	58.18	10 40.90	0.781	12 44 45.72
Wed.	3	12 37 42.78	9.088	4 3 56.6	58.06	10 59.49	0.768	12 48 42.27
Thur.	4	12 41 21.07	9.102	4 27 8.6	–57.93	11 17.75	0.754	12 52 38.82
Frid.	5	12 44 59.70	9.117	4 50 17.2	57.78	11 35.67	0.739	12 56 35.38
Sat.	6	12 48 38.70	9.133	5 13 22.1	57.62	11 53.23	0.724	13 0 31.93
SUN.	7	12 52 18.07	9.149	5 36 22.8	–57.44	12 10.42	0.708	13 4 28.48
Mon.	8	12 55 57.84	9.166	5 59 19.2	57.25	12 27.20	0.691	13 8 25.04
Tues.	9	12 59 38.03	9.184	6 22 10.7	57.04	12 43.56	0.673	13 12 21.59
Wed.	10	13 3 18.65	9.202	6 44 57.0	–56.82	12 59.50	0.654	13 16 18.15
Thur.	11	13 6 59.73	9.222	7 7 37.8	56.58	13 14.97	0.635	13 20 14.70
Frid.	12	13 10 41.30	9.243	7 30 12.8	56.33	13 29.96	0.615	13 24 11.26
Sat.	13	13 14 23.36	9.264	7 52 41.5	–56.06	13 44.45	0.593	13 28 7.81
SUN.	14	13 18 5.96	9.286	8 15 3.7	55.78	13 58.41	0.570	13 32 4.36
Mon.	15	13 21 49.09	9.309	8 37 18.9	55.48	14 11.83	0.547	13 36 0.92
Tues.	16	13 25 32.79	9.333	8 59 26.8	–55.17	14 24.68	0.523	13 39 57.47
Wed.	17	13 29 17.08	9.358	9 21 27.1	54.85	14 36.94	0.498	13 43 54.03
Thur.	18	13 33 1.98	9.383	9 43 19.5	54.51	14 48.60	0.472	13 47 50.58
Frid.	19	13 36 47.51	9.410	10 5 3.4	–54.15	14 59.62	0.446	13 51 47.14
Sat.	20	13 40 33.69	9.438	10 26 38.6	53.77	15 10.00	0.418	13 55 43.69
SUN.	21	13 44 20.54	9.466	10 48 4.7	53.39	15 19.71	0.390	13 59 40.24
Mon.	22	13 48 8.06	9.494	11 9 21.3	–52.99	15 28.74	0.362	14 3 36.80
Tues.	23	13 51 56.28	9.524	11 30 27.9	52.56	15 37.07	0.333	14 7 33.35
Wed.	24	13 55 45.21	9.554	11 51 24.2	52.12	15 44.70	0.303	14 11 29.91
Thur.	25	13 59 34.87	9.584	12 12 9.7	–51.66	15 51.59	0.272	14 15 26.46
Frid.	26	14 3 25.27	9.615	12 32 44.1	51.19	15 57.75	0.241	14 19 23.02
Sat.	27	14 7 16.41	9.646	12 53 6.9	50.70	16 3.17	0.210	14 23 19.58
SUN.	28	14 11 8.31	9.678	13 13 17.6	–50.19	16 7.82	0.178	14 27 16.13
Mon.	29	14 15 0.97	9.710	13 33 15.9	49.66	16 11.72	0.146	14 31 12.69
Tues.	30	14 18 54.40	9.743	13 53 1.3	49.11	16 14.84	0.114	14 35 9.24
Wed.	31	14 22 48.62	9.775	14 12 33.3	48.55	16 17.18	0.081	14 39 5.80
Thur.	32	14 26 43.61	9.808	S. 14 31 51.6	–47.97	16 18.74	0.048	14 43 2.35

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour, $+9^{s}.8565$. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	274	188 17 43.7	17 6.5	147.71	− 0.29	0.0002605	−52.4	11 17 19.57
2	275	189 16 49.5	16 12.2	147.78	0.40	0.0001345	52.6	11 13 23.66
3	276	190 15 57.4	15 20.0	147.86	0.49	0.0000077	52.9	11 9 27.76
4	277	191 15 7.0	14 29.7	147.94	− 0.54	9.9998805	−53.1	11 5 31.85
5	278	192 14 18.4	13 40.8	148.01	0.57	9.9997530	53.2	11 1 35.94
6	279	193 13 31.7	12 54.0	148.09	0.56	9.9996252	53.3	10 57 40.03
7	280	194 12 46.6	12 8.8	148.16	− 0.52	9.9994973	−53.2	10 53 44.12
8	281	195 12 3.4	11 25.5	148.23	0.46	9.9993696	53.2	10 49 48.22
9	282	196 11 21.9	10 43.8	148.31	0.37	9.9992421	53.0	10 45 52.31
10	283	197 10 42.2	10 4.0	148.39	− 0.26	9.9991151	−52.8	10 41 56.40
11	284	198 10 4.4	9 26.1	148.46	0.14	9.9989886	52.6	10 38 0.49
12	285	199 9 28.4	8 50.0	148.54	− 0.01	9.9988628	52.2	10 34 4.58
13	286	200 8 54.4	8 15.9	148.62	+ 0.13	9.9987380	−51.9	10 30 8.67
14	287	201 8 22.2	7 43.5	148.71	0.25	9.9986138	51.5	10 26 12.77
15	288	202 7 52.2	7 13.4	148.79	0.37	9.9984908	51.1	10 22 16.86
16	289	203 7 24.1	6 45.2	148.88	+ 0.46	9.9983687	−50.7	10 18 20.95
17	290	204 6 58.3	6 19.3	148.97	0.53	9.9982475	50.3	10 14 25.04
18	291	205 6 34.7	5 55.6	149.06	0.57	9.9981274	49.9	10 10 29.13
19	292	206 6 13.2	5 33.9	149.15	+ 0.59	9.9980081	−49.5	10 6 33.22
20	293	207 5 54.0	5 14.6	149.25	0.57	9.9978897	49.2	10 2 37.31
21	294	208 5 37.2	4 57.7	149.35	0.52	9.9977719	48.9	9 58 41.40
22	295	209 5 22.5	4 42.9	149.44	+ 0.45	9.9976548	−48.7	9 54 45.50
23	296	210 5 10.1	4 30.3	149.53	0.35	9.9975383	48.5	9 50 49.59
24	297	211 5 0.0	4 20.1	149.62	0.24	9.9974222	48.3	9 46 53.68
25	298	212 4 52.0	4 12.0	149.71	+ 0.11	9.9973066	−48.1	9 42 57.77
26	299	213 4 46.3	4 6.1	149.80	− 0.02	9.9971913	48.0	9 39 1.86
27	300	214 4 42.6	4 2.3	149.89	0.15	9.9970763	47.9	9 35 5.95
28	301	215 4 41.0	4 0.5	149.97	− 0.27	9.9969616	−47.8	9 31 10.04
29	302	216 4 41.4	4 0.8	150.05	0.38	9.9968471	47.7	9 27 14.13
30	303	217 4 43.6	4 2.9	150.13	0.47	9.9967328	47.5	9 23 18.22
31	304	218 4 47.6	4 6.7	150.20	0.52	9.9966189	47.4	9 19 22.31
32	305	219 4 53.4	4 12.4	150.28	− 0.55	9.9965055	−47.2	9 15 26.40

NOTE. –The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour,
— $9^s.8296$.
(Table II.)

GREENWICH MEAN TIME.

THE MOON'S

Day of the Month.	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 41.5	15 35.0	57 28.6	−1.95	57 5.0	−1.96	1 37.4	2.04	2.3
2	15 28.7	15 22.5	56 41.7	1.92	56 18.9	1.85	2 27.3	2.12	3.3
3	15 16.6	15 11.1	55 57.2	1.75	55 36.9	1.62	3 19.0	2.18	4.3
4	15 6.0	15 1.5	55 18.3	−1.46	55 1.8	−1.29	4 11.9	2.21	5.3
5	14 57.6	14 54.8	54 47.4	1.10	54 35.4	0.90	5 5.0	2.20	6.3
6	14 51.7	14 49.8	54 25.9	0.68	54 19.0	0.47	5 57.2	2.14	7.3
7	14 48.7	14 48.2	54 14.7	−0.25	54 13.1	−0.03	6 47.3	2.03	8.3
8	14 48.5	14 49.4	54 13.9	+0.18	54 17.3	+0.38	7 34.8	1.93	9.3
9	14 51.0	14 53.1	54 23.1	0.57	54 31.0	0.75	8 19.9	1.83	10.3
10	14 55.9	14 59.1	54 41.1	+0.91	54 52.9	+1.05	9 2.9	1.76	11.3
11	15 2.7	15 6.8	55 6.4	1.18	55 21.3	1.28	9 44.6	1.73	12.3
12	15 11.1	15 15.7	55 37.2	1.36	55 54.0	1.42	10 26.1	1.74	13.3
13	15 20.4	15 25.2	56 11.2	+1.45	56 28.7	+1.45	11 8.4	1.80	14.3
14	15 29.9	15 34.5	56 46.1	1.43	57 3.1	1.40	11 52.7	1.91	15.3
15	15 39.0	15 43.3	57 19.6	1.35	57 35.4	1.27	12 40.3	2.06	16.3
16	15 47.3	15 51.0	57 50.1	+1.18	58 3.8	+1.09	13 32.1	2.25	17.3
17	15 54.5	15 57.5	58 16.3	0.99	58 27.6	0.89	14 28.5	2.46	18.3
18	16 0.3	16 2.6	58 37.6	0.78	58 46.4	0.68	15 28.9	2.58	19.3
19	16 4.7	16 6.5	58 54.0	+0.58	59 0.4	+0.48	16 31.4	2.61	20.3
20	16 7.9	16 9.0	59 5.6	0.39	59 9.7	0.30	17 33.3	2.53	21.3
21	16 9.8	16 10.4	59 12.8	0.21	59 14.7	+0.11	18 32.2	2.38	22.3
22	16 10.5	16 10.4	59 15.4	+0.01	59 15.0	−0.09	19 27.2	2.21	23.3
23	16 10.0	16 9.1	59 13.3	−0.20	59 10.2	0.32	20 18.3	2.06	24.3
24	16 7.9	16 6.3	59 5.7	0.44	58 59.7	0.57	21 6.6	1.97	25.3
25	16 4.2	16 1.7	58 52.1	−0.70	58 42.8	−0.85	21 53.3	1.93	26.3
26	15 58.7	15 55.2	58 31.8	0.98	58 19.2	1.11	22 39.8	1.95	27.3
27	15 51.4	15 47.2	58 5.1	1.23	57 49.6	1.34	23 27.1	2.00	28.3
28	15 42.6	15 37.8	57 32.9	−1.43	57 15.2	−1.50	δ		29.3
29	15 32.8	15 27.7	56 56.8	1.55	56 37.9	1.58	0 16.2	2.10	0.8
30	15 22.5	15 17.5	56 19.0	1.56	56 0.4	1.53	1 7.3	2.17	1.8
31	15 12.6	15 7.9	55 42.4	1.46	55 25.3	1.38	2 0.3	2.23	2.8
32	15 3.6	14 59.6	55 9.4	−1.26	54 55.0	−1.12	2 54.2	2.24	3.8

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	MONDAY 1.					**WEDNESDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	14 15 3.34	2.1363	S.16 51 8.5	13.412	0	16 0 42.23	2.2636	S.25 23 6.8	7.604
1	14 17 11.59	2.1388	17 4 30.2	13.312	1	16 2 58.11	2.2657	25 30 38.9	7.465
2	14 19 20.00	2.1414	17 17 45.9	13.211	2	16 5 14.12	2.2678	25 38 2.6	7.326
3	14 21 28.56	2.1439	17 30 55.5	13.109	3	16 7 30.25	2.2699	25 45 18.0	7.187
4	14 23 37.27	2.1465	17 43 59.0	13.007	4	16 9 46.51	2.2720	25 52 25.0	7.046
5	14 25 46.14	2.1491	17 56 56.3	12.903	5	16 12 2.89	2.2739	25 59 23.5	6.905
6	14 27 55.17	2.1517	18 9 47.3	12.798	6	16 14 19.38	2.2758	26 6 13.6	6.764
7	14 30 4.35	2.1544	18 22 32.0	12.692	7	16 16 35.99	2.2777	26 12 55.2	6.623
8	14 32 13.69	2.1571	18 35 10.3	12.585	8	16 18 52.71	2.2796	26 19 28.3	6.481
9	14 34 23.20	2.1598	18 47 42.2	12.477	9	16 21 9.54	2.2814	26 25 52.9	6.338
10	14 36 32.87	2.1625	19 0 7.6	12.368	10	16 23 26.48	2.2831	26 32 8.9	6.195
11	14 38 42.70	2.1652	19 12 26.4	12.258	11	16 25 43.51	2.2847	26 38 16.3	6.052
12	14 40 52.69	2.1679	19 24 38.5	12.147	12	16 28 0.64	2.2863	26 44 15.2	5.909
13	14 43 2.85	2.1707	19 36 44.0	12.036	13	16 30 17.87	2.2879	26 50 5.4	5.765
14	14 45 13.18	2.1735	19 48 42.8	11.923	14	16 32 35.19	2.2893	26 55 47.0	5.621
15	14 47 23.67	2.1763	20 0 34.8	11.809	15	16 34 52.59	2.2907	27 1 19.9	5.476
16	14 49 34.33	2.1791	20 12 19.9	11.694	16	16 37 10.07	2.2920	27 6 44.1	5.331
17	14 51 45.16	2.1818	20 23 58.1	11.579	17	16 39 27.63	2.2933	27 11 59.6	5.187
18	14 53 56.15	2.1846	20 35 29.4	11.462	18	16 41 45.27	2.2946	27 17 6.5	5.041
19	14 56 7.31	2.1875	20 46 53.6	11.345	19	16 44 2.98	2.2957	27 22 4.6	4.895
20	14 58 18.65	2.1903	20 58 10.8	11.227	20	16 46 20.75	2.2967	27 26 53.9	4.749
21	15 0 30.15	2.1931	21 9 20.9	11.108	21	16 48 38.59	2.2977	27 31 34.5	4.603
22	15 2 41.82	2.1959	21 20 23.8	10.988	22	16 50 56.48	2.2986	27 36 6.3	4.457
23	15 4 53.66	2.1987	S.21 31 19.4	10.867	23	16 53 14.42	2.2995	S.27 40 29.3	4.311
	TUESDAY 2.					**THURSDAY 4.**			
0	15 7 5.66	2.2014	S.21 42 7.8	10.746	0	16 55 32.42	2.3003	S.27 44 43.6	4.165
1	15 9 17.83	2.2043	21 52 48.9	10.623	1	16 57 50.46	2.3010	27 48 49.1	4.018
2	15 11 30.18	2.2071	22 3 22.6	10.499	2	17 0 8.54	2.3017	27 52 45.7	3.870
3	15 13 42.69	2.2099	22 13 48.8	10.375	3	17 2 26.66	2.3022	27 56 33.5	3.723
4	15 15 55.37	2.2127	22 24 7.6	10.251	4	17 4 44.81	2.3027	28 0 12.5	3.576
5	15 18 8.21	2.2154	22 34 18.9	10.125	5	17 7 2.98	2.3030	28 3 42.7	3.429
6	15 20 21.22	2.2182	22 44 22.6	9.998	6	17 9 21.17	2.3033	28 7 4.0	3.282
7	15 22 31.39	2.2209	22 54 18.7	9.871	7	17 11 39.38	2.3036	28 10 16.5	3.134
8	15 24 47.73	2.2236	23 4 7.1	9.743	8	17 13 57.60	2.3037	28 13 20.1	2.987
9	15 27 1.23	2.2263	23 13 47.9	9.615	9	17 16 15.83	2.3038	28 16 14.9	2.840
10	15 29 14.89	2.2290	23 23 20.9	9.485	10	17 18 34.06	2.3038	28 19 0.9	2.692
11	15 31 28.71	2.2317	23 32 46.1	9.354	11	17 20 52.29	2.3038	28 21 38.0	2.545
12	15 33 42.70	2.2344	23 42 3.4	9.223	12	17 23 10.52	2.3037	28 24 6.3	2.397
13	15 35 56.84	2.2369	23 51 12.9	9.092	13	17 25 28.74	2.3035	28 26 25.7	2.250
14	15 38 11.13	2.2395	24 0 14.5	8.960	14	17 27 46.94	2.3031	28 28 36.3	2.103
15	15 40 25.58	2.2421	24 9 8.1	8.827	15	17 30 5.11	2.3027	28 30 38.1	1.956
16	15 42 40.18	2.2446	24 17 53.7	8.693	16	17 32 23.26	2.3022	28 32 31.0	1.809
17	15 44 54.93	2.2471	24 26 31.3	8.560	17	17 34 41.38	2.3017	28 34 15.1	1.662
18	15 47 9.83	2.2496	24 35 0.9	8.426	18	17 36 59.46	2.3010	28 35 50.4	1.515
19	15 49 24.88	2.2520	24 43 22.4	8.290	19	17 39 17.50	2.3003	28 37 16.9	1.368
20	15 51 40.07	2.2543	24 51 35.7	8.154	20	17 41 35.49	2.2995	28 38 34.6	1.221
21	15 53 55.40	2.2567	24 59 40.8	8.017	21	17 43 53.44	2.2987	28 39 43.4	1.074
22	15 56 10.87	2.2590	25 7 37.7	7.880	22	17 46 11.33	2.2977	28 40 43.5	0.928
23	15 58 26.48	2.2613	25 15 26.4	7.742	23	17 48 29.16	2.2967	28 41 34.8	0.782
24	16 0 42.23	2.2636	S.25 23 6.8	7.604	24	17 50 46.93	2.2956	S.28 42 17.4	0.637

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	17 50 46.93	2.2956	S. 28 42 17.4	0.637
1	17 53 4.63	2.2943	28 42 51.2	0.491
2	17 55 22.25	2.2930	28 43 16.3	0.345
3	17 57 39.79	2.2917	28 43 32.6	0.200
4	17 59 57.25	2.2902	28 43 40.3	− 0.056
5	18 2 14.62	2.2887	28 43 39.3	+ 0.089
6	18 4 31.89	2.2871	28 43 29.6	0.233
7	18 6 49.07	2 2854	28 43 11.3	0.377
8	18 9 6.14	2.2836	28 42 44.4	0.521
9	18 11 23.10	2.2817	28 42 8.8	0.665
10	18 13 39.95	2.2798	28 41 24.6	0.808
11	18 15 56.68	2.2779	28 40 31.9	0.950
12	18 18 13.30	2.2759	28 39 30.6	1.092
13	18 20 29.79	2.2737	28 38 20.8	1.234
14	18 22 46.15	2.2715	28 37 2.5	1.376
15	18 25 2.37	2.2692	28 35 35.7	1.517
16	18 27 18.45	2.2669	28 34 0.5	1.657
17	18 29 34.39	2.2645	28 32 16.9	1.797
18	18 31 50.19	2.2620	28 30 24.8	1.937
19	18 34 5.83	2.2594	28 28 24.4	2.076
20	18 36 21.32	2.2568	28 26 15.7	2.215
21	18 38 36.65	2.2541	28 23 58.6	2.354
22	18 40 51.81	2.2513	28 21 33.2	2.491
23	18 43 6.81	2.2486	S. 28 18 59.6	2.628

SATURDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	18 45 21.64	2.2457	S. 28 16 17.8	2.765
1	18 47 36.29	2.2427	28 13 27.8	2.902
2	18 49 50.76	2.2397	28 10 29.6	3.037
3	18 52 5.06	2.2367	28 7 23.3	3.172
4	18 54 19.17	2.2336	28 4 8.9	3.307
5	18 56 33.09	2.2304	28 0 46.4	3.442
6	18 58 46.82	2.2272	27 57 15.9	3.575
7	19 1 0.35	2.2239	27 53 37.4	3.707
8	19 3 13.69	2.2206	27 49 51.0	3.839
9	19 5 26.83	2.2172	27 45 56.7	3.971
10	19 7 39.76	2.2138	27 41 54.5	4.102
11	19 9 52.49	2.2104	27 37 44.4	4.233
12	19 12 5.01	2.2069	27 33 26.5	4.363
13	19 14 17.32	2.2033	27 29 0.9	4.492
14	19 16 29.41	2.1997	27 24 27.5	4.621
15	19 18 41.28	2.1960	27 19 46.4	4.748
16	19 20 52.93	2.1923	27 14 57.7	4.875
17	19 23 4.36	2.1887	27 10 1.4	5.002
18	19 25 15.57	2.1849	27 4 57.4	5.129
19	19 27 26.55	2.1811	26 59 45.9	5.254
20	19 29 37.30	2.1772	26 54 27.0	5 378
21	19 31 47.82	2.1734	26 49 0.6	5.502
22	19 33 58.11	2.1695	26 43 26.8	5.625
23	19 36 8.16	2.1655	26 37 45.6	5.748
24	19 38 17.97	2.1615	S. 26 31 57.0	5.871

SUNDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 38 17.97	2.1615	S. 26 31 57.0	5.871
1	19 40 27.54	2.1576	26 26 1.1	5.992
2	19 42 36.88	2.1537	26 19 58.0	6.111
3	19 44 45.98	2.1497	26 13 47.8	6.230
4	19 46 54.84	2.1456	26 7 30.4	6.349
5	19 49 3.45	2.1415	26 1 5.9	6.468
6	19 51 11.82	2.1374	25 54 34.3	6.586
7	19 53 19.94	2.1333	25 47 55.6	6.703
8	19 55 27.82	2.1292	25 41 10.0	6.818
9	19 57 35.45	2.1251	25 34 17.5	6.933
10	19 59 42.83	2.1209	25 27 18.1	7.048
11	20 1 49.96	2.1167	25 20 11.8	7.162
12	20 3 56.84	2.1126	25 12 58.7	7.274
13	20 6 3.47	2.1084	25 5 38.9	7.387
14	20 8 9.85	2.1042	24 58 12.3	7.499
15	20 10 15.98	2.1001	24 50 39.0	7.610
16	20 12 21.86	2.0959	24 42 59.1	7.719
17	20 14 27.49	2.0918	24 35 12.7	7.828
18	20 16 32.87	2.0876	24 27 19.7	7.937
19	20 18 38.00	2.0833	24 19 20.2	8.045
20	20 20 42.87	2.0791	24 11 14.3	8.152
21	20 22 47.49	2.0750	24 3 1.9	8.259
22	20 24 51.87	2.0708	23 54 43.2	8.364
23	20 26 55.99	2.0666	S. 23 46 18.2	8.469

MONDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	20 28 59.86	2.0624	S. 23 37 46.9	8.573
1	20 31 3.48	2.0583	23 29 9.4	8.677
2	20 33 6.85	2.0542	23 20 25.7	8.779
3	20 35 9.98	2.0501	23 11 35.9	8.880
4	20 37 12.86	2.0459	23 2 40.1	8.981
5	20 39 15.49	2.0418	22 53 38.2	9.082
6	20 41 17.87	2.0377	22 44 30.3	9.181
7	20 43 20.01	2.0337	22 35 16.5	9.279
8	20 45 21.91	2.0296	22 25 56.8	9.377
9	20 47 23.56	2.0255	22 16 31.2	9.475
10	20 49 24.97	2.0215	22 6 59.8	9.571
11	20 51 26.14	2.0175	21 57 22.7	9.666
12	20 53 27.07	2.0135	21 47 39.9	9.761
13	20 55 27.76	2.0096	21 37 51.4	9.855
14	20 57 28.22	2.0057	21 27 57.3	9.948
15	20 59 28.44	2.0018	21 17 57.6	10.041
16	21 1 28.43	1.9979	21 7 52.4	10.132
17	21 3 28.19	1.9940	20 57 41.7	10.223
18	21 5 27.71	1.9902	20 47 25.6	10.313
19	21 7 27.01	1.9864	20 37 4.1	10.402
20	21 9 26.08	1.9827	20 26 37.3	10.491
21	21 11 24.93	1.9789	20 16 5.2	10.579
22	21 13 23.55	1.9752	20 5 27.8	10.667
23	21 15 21.95	1.9716	19 54 45.2	10.753
24	21 17 20.14	1.9680	S. 19 43 57.5	10.838

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSIÓN AND DECLINATION.

TUESDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 17 20.14	1.9680	S. 19 43 57.5	10.838
1	21 19 18.11	1.9644	19 33 4.7	10.923
2	21 21 15.87	1.9608	19 22 6.8	11.007
3	21 23 13.41	1.9573	19 11 3.9	11.090
4	21 25 10.74	1.9538	18 59 56.0	11.172
5	21 27 7.87	1.9504	18 48 43.2	11.254
6	21 29 4.79	1.9470	18 37 25.5	11.336
7	21 31 1.51	1.9437	18 26 2.9	11.416
8	21 32 58.03	1.9404	18 14 35.6	11.494
9	21 34 54.35	1.9371	18 3 3.6	11.573
10	21 36 50.48	1.9338	17 51 26.9	11.651
11	21 38 46.41	1.9306	17 39 45.5	11.728
12	21 40 42.15	1.9275	17 27 59.5	11.805
13	21 42 37.71	1.9244	17 16 8.9	11.881
14	21 44 33.08	1.9213	17 4 13.8	11.955
15	21 46 28.27	1.9183	16 52 14.3	12.028
16	21 48 23.28	1.9154	16 40 10.4	12.102
17	21 50 18.12	1.9126	16 28 2.1	12.175
18	21 52 12.79	1.9097	16 15 49.4	12.247
19	21 54 7.29	1.9069	16 3 32.4	12.318
20	21 56 1.62	1.9041	15 51 11.2	12.388
21	21 57 55.78	1.9014	15 38 45.9	12.457
22	21 59 49.78	1.8988	15 26 16.4	12.526
23	22 1 43.63	1.8962	S. 15 13 42.8	12.594

WEDNESDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 3 37.32	1.8936	S. 15 1 5.1	12.662
1	22 5 30.86	1.8911	14 48 23.4	12.728
2	22 7 24.25	1.8887	14 35 37.8	12.794
3	22 9 17.50	1.8863	14 22 48.2	12.859
4	22 11 10.61	1.8840	14 9 54.7	12.923
5	22 13 3.58	1.8817	13 56 57.4	12.986
6	22 14 56.41	1.8794	13 43 56.4	13.048
7	22 16 49.11	1.8773	13 30 51.6	13.110
8	22 18 41.69	1.8752	13 17 43.2	13.171
9	22 20 34.14	1.8732	13 4 31.1	13.232
10	22 22 26.47	1.8712	12 51 15.4	13.291
11	22 24 18.68	1.8693	12 37 56.2	13.350
12	22 26 10.78	1.8674	12 24 33.4	13.408
13	22 28 2.77	1.8656	12 11 7.2	13.465
14	22 29 54.65	1.8638	11 57 37.6	13.522
15	22 31 46.43	1.8622	11 44 4.6	13.577
16	22 33 38.11	1.8606	11 30 28.3	13.632
17	22 35 29.70	1.8590	11 16 48.8	13.686
18	22 37 21.19	1.8575	11 3 6.0	13.739
19	22 39 12.60	1.8561	10 49 20.1	13.792
20	22 41 3.92	1.8547	10 35 31.0	13.844
21	22 42 55.16	1.8533	10 21 38.8	13.895
22	22 44 46.32	1.8521	10 7 43.6	13.945
23	22 46 37.41	1.8509	9 53 45.4	13.995
24	22 48 28.43	1.8498	S. 9 39 44.2	14.044

THURSDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 48 28.43	1.8498	S. 9 39 44.2	14.044
1	22 50 19.39	1.8488	9 25 40.1	14.092
2	22 52 10.29	1.8478	9 11 33.2	14.138
3	22 54 1.12	1.8468	8 57 23.6	14.184
4	22 55 51.90	1.8459	8 43 11.2	14.229
5	22 57 42.63	1.8452	8 28 56.1	14.274
6	22 59 33.32	1.8445	8 14 38.3	14.318
7	23 1 23.97	1.8438	8 0 17.9	14.361
8	23 3 14.58	1.8432	7 45 55.0	14.403
9	23 5 5.15	1.8426	7 31 29.6	14.444
10	23 6 55.69	1.8422	7 17 1.7	14.485
11	23 8 46.21	1.8418	7 2 31.4	14.524
12	23 10 36.71	1.8415	6 47 58.8	14.563
13	23 12 27.19	1.8413	6 33 23.9	14.601
14	23 14 17.66	1.8411	6 18 46.7	14.638
15	23 16 8.12	1.8409	6 4 7.3	14.674
16	23 17 58.57	1.8408	5 49 25.8	14.710
17	23 19 49.02	1.8409	5 34 42.1	14.745
18	23 21 39.48	1.8411	5 19 56.4	14.778
19	23 23 29.95	1.8412	5 5 8.7	14.811
20	23 25 20.43	1.8414	4 50 19.1	14.843
21	23 27 10.92	1.8417	4 35 27.6	14.874
22	23 29 1.43	1.8421	4 20 34.2	14.905
23	23 30 51.97	1.8426	S. 4 5 39.0	14.934

FRIDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 32 42.54	1.8432	S. 3 50 42.1	14.962
1	23 34 33.15	1.8437	3 35 43.5	14.990
2	23 36 23.79	1.8443	3 20 43.3	15.017
3	23 38 14.47	1.8451	3 5 41.5	15.042
4	23 40 5.20	1.8459	2 50 38.2	15.067
5	23 41 55.98	1.8468	2 35 33.5	15.091
6	23 43 46.81	1.8477	2 20 27.3	15.115
7	23 45 37.70	1.8487	2 5 19.7	15.137
8	23 47 28.66	1.8499	1 50 10.9	15.157
9	23 49 19.69	1.8511	1 35 0.9	15.177
10	23 51 10.79	1.8523	1 19 49.7	15.197
11	23 53 1.97	1.8537	1 4 37.3	15.215
12	23 54 53.23	1.8551	0 49 23.9	15.232
13	23 56 44.58	1.8566	0 34 9.5	15.248
14	23 58 36.02	1.8581	0 18 54.1	15.264
15	0 0 27.55	1.8597	S. 0 3 37.8	15.278
16	0 2 19.18	1.8614	N. 0 11 39.3	15.292
17	0 4 10.92	1.8632	0 26 57.2	15.305
18	0 6 2.77	1.8651	0 42 15.9	15.317
19	0 7 54.73	1.8670	0 57 35.2	15.327
20	0 9 46.81	1.8691	1 12 55.1	15.336
21	0 11 39.02	1.8712	1 28 15.5	15.344
22	0 13 31.35	1.8733	1 43 36.4	15.352
23	0 15 23.81	1.8755	1 58 57.7	15.358
24	0 17 16.41	1.8778	N. 2 14 19.3	15.363

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 17 16.41	1.8778	N. 2 14 19.3	15.363
1	0 19 9.15	1.8802	2 29 41.2	15.367
2	0 21 2.04	1.8827	2 45 3.3	15.370
3	0 22 55.08	1.8853	3 0 25.6	15.372
4	0 24 48.28	1.8879	3 15 48.0	15.373
5	0 26 41.63	1.8905	3 31 10.4	15.373
6	0 28 35.14	1.8933	3 46 32.8	15.372
7	0 30 28.82	1.8962	4 1 55.1	15.370
8	0 32 22.68	1.8992	4 17 17.2	15.366
9	0 34 16.72	1.9022	4 32 39.0	15.361
10	0 36 10.94	1.9053	4 48 0.5	15.355
11	0 38 5.35	1.9084	5 3 21.6	15.348
12	0 39 59.95	1.9117	5 18 42.3	15.341
13	0 41 54.75	1.9150	5 34 2.5	15.332
14	0 43 49.75	1.9184	5 49 22.1	15.321
15	0 45 44.96	1.9219	6 4 41.0	15.309
16	0 47 40.38	1.9254	6 19 59.2	15.297
17	0 49 36.01	1.9290	6 35 16.6	15.283
18	0 51 31.86	1.9328	6 50 33.2	15.268
19	0 53 27.94	1.9366	7 5 48.8	15.252
20	0 55 24.25	1.9404	7 21 3.4	15.234
21	0 57 20.79	1.9443	7 36 16.9	15.215
22	0 59 17.57	1.9484	7 51 29.2	15.195
23	1 1 14.60	1.9525	N. 8 6 40.3	15.174

SUNDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 3 11.87	1.9567	N. 8 21 50.1	15.152
1	1 5 9.40	1.9610	8 36 58.5	15.128
2	1 7 7.19	1.9653	8 52 5.4	15.103
3	1 9 5.23	1.9696	9 7 10.8	15.076
4	1 11 3.54	1.9741	9 22 14.5	15.047
5	1 13 2.12	1.9787	9 37 16.5	15.018
6	1 15 0.98	1.9833	9 52 16.7	14.988
7	1 17 0.12	1.9881	10 7 15.1	14.956
8	1 18 59.55	1.9929	10 22 11.5	14.923
9	1 20 59.27	1.9977	10 37 5.8	14.888
10	1 22 59.28	2.0026	10 51 58.0	14.853
11	1 24 59.58	2.0075	11 6 48.1	14.816
12	1 27 0.18	2.0126	11 21 35.9	14.777
13	1 29 1.09	2.0178	11 36 21.3	14.737
14	1 31 2.32	2.0231	11 51 4.3	14.696
15	1 33 3.86	2.0284	12 5 44.8	14.653
16	1 35 5.72	2.0337	12 20 22.6	14.608
17	1 37 7.91	2.0392	12 34 57.7	14.563
18	1 39 10.42	2.0447	12 49 30.1	14.516
19	1 41 13.27	2.0503	13 3 59.6	14.467
20	1 43 16.46	2.0559	13 18 26.1	14.416
21	1 45 19.98	2.0616	13 32 49.5	14.364
22	1 47 23.85	2.0674	13 47 9.8	14.312
23	1 49 28.07	2.0732	14 1 26.9	14.257
24	1 51 32.63	2.0790	N.14 15 40.6	14.200

MONDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 51 32.63	2.0790	N.14 15 40.6	14.200
1	1 53 37.55	2.0851	14 29 50.9	14.142
2	1 55 42.84	2.0912	14 43 57.7	14.083
3	1 57 48.49	2.0973	14 58 0.9	14.022
4	1 59 54.51	2.1034	15 12 0.4	13.960
5	2 2 0.90	2.1097	15 25 56.1	13.897
6	2 4 7.67	2.1160	15 39 48.0	13.832
7	2 6 14.82	2.1223	15 53 35.9	13.764
8	2 8 22.35	2.1287	16 7 19.7	13.695
9	2 10 30.26	2.1352	16 20 59.3	13.625
10	2 12 38.57	2.1417	16 34 34.7	13.553
11	2 14 47.27	2.1482	16 48 5.7	13.480
12	2 16 56.36	2.1549	17 1 32.3	13.405
13	2 19 5.85	2.1616	17 14 54.3	13.328
14	2 21 15.75	2.1683	17 28 11.7	13.250
15	2 23 26.05	2.1751	17 41 24.3	13.170
16	2 25 36.76	2.1819	17 54 32.1	13.088
17	2 27 47.88	2.1888	18 7 34.9	13.004
18	2 29 59.41	2.1957	18 20 32.6	12.919
19	2 32 11.36	2.2027	18 33 25.2	12.833
20	2 34 23.73	2.2097	18 46 12.6	12.745
21	2 36 36.52	2.2167	18 58 54.6	12.654
22	2 38 49.73	2.2237	19 11 31.1	12.562
23	2 41 3.37	2.2308	N.19 24 2.1	12.469

TUESDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 43 17.43	2.2379	N.19 36 27.4	12.374
1	2 45 31.92	2.2451	19 48 47.0	12.277
2	2 47 46.85	2.2524	20 1 0.7	12.178
3	2 50 2.21	2.2596	20 13 8.4	12.078
4	2 52 18.00	2.2669	20 25 10.1	11.977
5	2 54 34.23	2.2742	20 37 5.6	11.873
6	2 56 50.90	2.2815	20 48 54.8	11.767
7	2 59 8.01	2.2887	21 0 37.6	11.660
8	3 1 25.55	2.2960	21 12 14.0	11.552
9	3 3 43.53	2.3033	21 23 43.8	11.441
10	3 6 1.95	2.3107	21 35 6.9	11.328
11	3 8 20.82	2.3181	21 46 23.2	11.215
12	3 10 40.13	2.3255	21 57 32.7	11.099
13	3 12 59.88	2.3328	22 8 35.1	10.981
14	3 15 20.07	2.3402	22 19 30.4	10.862
15	3 17 40.70	2.3475	22 30 18.5	10.741
16	3 20 1.77	2.3549	22 40 59.3	10.618
17	3 22 23.29	2.3623	22 51 32.7	10.494
18	3 24 45.25	2.3697	23 1 58.6	10.368
19	3 27 7.65	2.3770	23 12 16.9	10.240
20	3 29 30.49	2.3842	23 22 27.4	10.110
21	3 31 53.76	2.3915	23 32 30.1	9.979
22	3 34 17.47	2.3987	23 42 24.9	9.846
23	3 36 41.61	2.4060	23 52 11.6	9.711
24	3 39 6.19	2.4132	N.24 1 50.2	9.575

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
WEDNESDAY 17.					FRIDAY 19.				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	3 39 6.19	2.4139	N.24 1 50.2	9.575	0	5 41 52.04	2.6586	N.28 35 58.4	1.380
1	3 41 31.20	2.4204	24 11 20.6	9.437	1	5 44 31.61	2.6603	28 37 15.4	1.186
2	3 43 56.64	2.4276	24 20 42.6	9.297	2	5 47 11.28	2.6620	28 38 20.7	0.992
3	3 46 22.51	2.4347	24 29 56.2	9.156	3	5 49 51.05	2.6635	28 39 14.4	0.797
4	3 48 48.80	2.4418	24 39 1.3	9.013	4	5 52 30.90	2.6647	28 39 56.3	0.601
5	3 51 15.52	2.4488	24 47 57.8	8.868	5	5 55 10.81	2.6657	28 40 26.5	0.405
6	3 53 42.66	2.4557	24 56 45.5	8.722	6	5 57 50.78	2.6666	28 40 44.9	0.209
7	3 56 10.21	2.4626	25 5 24.4	8.574	7	6 0 30.80	2.6673	28 40 51.6	+0.013
8	3 58 38.17	2.4695	25 13 54.4	8.425	8	6 3 10.86	2.6679	28 40 46.5	−0.183
9	4 1 6.55	2.4763	25 22 15.4	8.274	9	6 5 50.95	2.6682	28 40 29.6	0.380
10	4 3 35.33	2.4830	25 30 27.3	8.122	10	6 8 31.05	2.6684	28 40 0.9	0.576
11	4 6 4.51	2.4896	25 38 30.0	7.967	11	6 11 11.16	2.6685	28 39 20.5	0.772
12	4 8 34.08	2.4962	25 46 23.3	7.810	12	6 13 51.27	2.6684	28 38 28.3	0.968
13	4 11 4.05	2.5027	25 54 7.2	7.653	13	6 16 31.36	2.6680	28 37 24.3	1.165
14	4 13 34.40	2.5091	26 1 41.7	7.496	14	6 19 11.43	2.6675	28 36 8.5	1.361
15	4 16 5.14	2.5155	26 9 6.7	7.336	15	6 21 51.46	2.6668	28 34 41.0	1.557
16	4 18 36.26	2.5218	26 16 22.0	7.173	16	6 24 31.44	2.6659	28 33 1.7	1.752
17	4 21 7.75	2.5280	26 23 27.5	7.010	17	6 27 11.37	2.6650	28 31 10.7	1.948
18	4 23 39.62	2.5341	26 30 23.2	6.846	18	6 29 51.24	2.6638	28 29 7.9	2.144
19	4 26 11.85	2.5401	26 37 9.0	6.680	19	6 32 31.03	2.6624	28 26 53.4	2.339
20	4 28 44.43	2.5459	26 43 44.8	6.512	20	6 35 10.73	2.6609	28 24 27.2	2.533
21	4 31 17.36	2.5517	26 50 10.5	6.343	21	6 37 50.34	2.6592	28 21 49.4	2.726
22	4 33 50.64	2.5574	26 56 26.0	6.173	22	6 40 29.84	2.6573	28 18 59.9	2.922
23	4 36 24.25	2.5630	N.27 2 31.3	6.002	23	6 43 9.22	2.6552	N.28 15 58.8	3.115
THURSDAY 18.					SATURDAY 20.				
0	4 38 58.20	2.5686	N.27 8 26.3	5.830	0	6 45 48.47	2.6530	N.28 12 46.1	3.306
1	4 41 32.48	2.5739	27 14 10.9	5.656	1	6 48 27.58	2.6507	28 9 21.8	3.501
2	4 44 7.07	2.5791	27 19 45.0	5.481	2	6 51 6.55	2.6483	28 5 46.0	3.692
3	4 46 41.97	2.5842	27 25 8.6	5.305	3	6 53 45.37	2.6457	28 1 58.8	3.883
4	4 49 17.17	2.5892	27 30 21.6	5.127	4	6 56 24.03	2.6428	27 58 0.1	4.073
5	4 51 52.67	2.5941	27 35 23.8	4.948	5	6 59 2.51	2.6397	27 53 50.0	4.262
6	4 54 28.46	2.5988	27 40 15.3	4.768	6	7 1 40.80	2.6366	27 49 28.6	4.451
7	4 57 4.53	2.6034	27 44 56.0	4.587	7	7 4 18.90	2.6334	27 44 55.9	4.639
8	4 59 40.87	2.6078	27 49 25.8	4.406	8	7 6 56.81	2.6301	27 40 11.9	4.827
9	5 2 17.47	2.6122	27 53 44.7	4.223	9	7 9 34.51	2.6265	27 35 16.6	5.014
10	5 4 54.33	2.6164	27 57 52.6	4.039	10	7 12 11.99	2.6228	27 30 10.2	5.199
11	5 7 31.44	2.6204	28 1 49.4	3.854	11	7 14 49.25	2.6190	27 24 52.7	5.384
12	5 10 8.78	2.6243	28 5 35.0	3.668	12	7 17 26.27	2.6150	27 19 24.1	5.568
13	5 12 46.36	2.6281	28 9 9.5	3.482	13	7 20 3.05	2.6109	27 13 44.5	5.751
14	5 15 24.15	2.6316	28 12 32.8	3.294	14	7 22 39.58	2.6067	27 7 54.0	5.932
15	5 18 2.15	2.6350	28 15 44.8	3.106	15	7 25 15.86	2.6025	27 1 52.6	6.113
16	5 20 40.35	2.6382	28 18 45.5	2.917	16	7 27 51.88	2.5981	26 55 40.4	6.293
17	5 23 18.74	2.6414	28 21 34.8	2.727	17	7 30 27.63	2.5935	26 49 17.5	6.472
18	5 25 57.32	2.6444	28 24 12.7	2.536	18	7 33 3.10	2.5888	26 42 43.8	6.650
19	5 28 36.07	2.6472	28 26 39.1	2.345	19	7 35 38.28	2.5840	26 35 59.5	6.826
20	5 31 14.98	2.6498	28 28 54.1	2.154	20	7 38 13.18	2.5792	26 29 4.7	7.001
21	5 33 54.04	2.6522	28 30 57.6	1.962	21	7 40 47.78	2.5741	26 21 59.4	7.175
22	5 36 33.24	2.6545	28 32 49.5	1.768	22	7 43 22.07	2.5690	26 14 43.7	7.348
23	5 39 12.58	2.6567	28 34 29.8	1.574	23	7 45 56.06	2.5639	26 7 17.6	7.520
42	5 41 52.04	2.6586	N.28 35 58.4	1.380	24	7 48 29.74	2.5587	N.25 59 41.3	7.690

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 48 29.74	2.5587	N.25 59 41.3	7.690
1	7 51 3.10	2.5533	25 51 54.8	7.859
2	7 53 36.13	2.5478	25 43 58.2	8.027
3	7 56 8.83	2.5423	25 35 51.6	8.193
4	7 58 41.20	2.5367	25 27 35.1	8.358
5	8 1 13.23	2.5310	25 19 8.7	8.522
6	8 3 44.92	2.5253	25 10 32.5	8.683
7	8 6 16.27	2.5195	25 1 46.7	8.843
8	8 8 47.26	2.5136	24 52 51.3	9.003
9	8 11 17.90	2.5077	24 43 46.3	9.162
10	8 13 48.18	2.5017	24 34 31.9	9.318
11	8 16 18.10	2.4957	24 25 8.2	9.473
12	8 18 47.66	2.4897	24 15 35.2	9.626
13	8 21 16.86	2.4835	24 5 53.1	9.778
14	8 23 45.68	2.4772	23 56 1.9	9.928
15	8 26 14.13	2.4710	23 46 1.7	10.077
16	8 28 42.20	2.4648	23 35 52.6	10.224
17	8 31 9.90	2.4586	23 25 34.8	10.369
18	8 33 37.23	2.4523	23 15 8.3	10.513
19	8 36 4.18	2.4459	23 4 33.2	10.657
20	8 38 30.74	2.4395	22 53 49.5	10.798
21	8 40 56.92	2.4331	22 42 57.5	10.936
22	8 43 22.72	2.4267	22 31 57.2	11.074
23	8 45 48.13	2.4203	N.22 20 48.6	11.211

MONDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 48 13.16	2.4139	N.22 9 31.9	11.345
1	8 50 37.80	2.4075	21 58 7.2	11.477
2	8 53 2.06	2.4011	21 46 34.6	11.608
3	8 55 25.94	2.3947	21 34 54.2	11.737
4	8 57 49.43	2.3883	21 23 6.1	11.865
5	9 0 12.54	2.3820	21 11 10.4	11.992
6	9 2 35.27	2.3757	20 59 7.1	12.117
7	9 4 57.62	2.3693	20 46 56.4	12.239
8	9 7 19.58	2.3628	20 34 38.4	12.360
9	9 9 41.15	2.3564	20 22 13.2	12.479
10	9 12 2.34	2.3501	20 9 40.9	12.597
11	9 14 23.16	2.3438	19 57 1.6	12.713
12	9 16 43.60	2.3375	19 44 15.4	12.827
13	9 19 3.66	2.3312	19 31 22.4	12.939
14	9 21 23.35	2.3250	19 18 22.7	13.051
15	9 23 42.66	2.3188	19 5 16.3	13.161
16	9 26 1.60	2.3126	18 52 3.4	13.268
17	9 28 20.17	2.3065	18 38 44.1	13.373
18	9 30 38.38	2.3004	18 25 18.6	13.477
19	9 32 56.22	2.2943	18 11 46.9	13.580
20	9 35 13.70	2.2882	17 58 9.0	13.682
21	9 37 30.81	2.2823	17 44 25.1	13.781
22	9 39 47.57	2.2764	17 30 35.3	13.878
23	9 42 3.98	2.2705	17 16 39.7	13.973
24	9 44 20.03	2.2647	N.17 2 38.5	14.067

TUESDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 44 20.03	2.2647	N.17 2 38.5	14.067
1	9 46 35.74	2.2589	16 48 31.7	14.159
2	9 48 51.10	2.2532	16 34 19.4	14.251
3	9 51 6.12	2.2475	16 20 1.6	14.340
4	9 53 20.80	2.2418	16 5 38.6	14.427
5	9 55 35.14	2.2362	15 51 10.4	14.512
6	9 57 49.15	2.2307	15 36 37.2	14.595
7	10 0 2.83	2.2253	15 21 59.0	14.678
8	10 2 16.19	2.2199	15 7 15.9	14.759
9	10 4 29.22	2.2146	14 52 27.9	14.838
10	10 6 41.94	2.2094	14 37 35.3	14.915
11	10 8 54.35	2.2042	14 22 38.1	14.991
12	10 11 6.44	2.1990	14 7 36.4	15.064
13	10 13 18.23	2.1940	13 52 30.4	15.136
14	10 15 29.72	2.1890	13 37 20.1	15.207
15	10 17 40.91	2.1841	13 22 5.5	15.277
16	10 19 51.81	2.1792	13 6 46.8	15.344
17	10 22 2.42	2.1744	12 51 24.2	15.409
18	10 24 12.74	2.1697	12 35 57.7	15.473
19	10 26 22.78	2.1651	12 20 27.4	15.536
20	10 28 32.55	2.1606	12 4 53.4	15.597
21	10 30 42.05	2.1561	11 49 15.8	15.656
22	10 32 51.28	2.1517	11 33 34.7	15.714
23	10 35 0.25	2.1473	N.11 17 50.1	15.770

WEDNESDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 37 8.96	2.1430	N.11 2 2.3	15.823
1	10 39 17.41	2.1388	10 46 11.3	15.877
2	10 41 25.62	2.1348	10 30 17.1	15.928
3	10 43 33.59	2.1308	10 14 19.9	15.978
4	10 45 41.32	2.1268	9 58 19.8	16.026
5	10 47 48.81	2.1229	9 42 16.8	16.072
6	10 49 56.07	2.1192	9 26 11.1	16.117
7	10 52 3.11	2.1155	9 10 2.8	16.160
8	10 54 9.93	2.1118	8 53 51.9	16.202
9	10 56 16.53	2.1082	8 37 38.6	16.242
10	10 58 22.92	2.1048	8 21 22.9	16.281
11	11 0 29.11	2.1015	8 5 4.9	16.317
12	11 2 35.10	2.0982	7 48 44.8	16.352
13	11 4 40.89	2.0950	7 32 22.6	16.386
14	11 6 46.50	2.0919	7 15 58.5	16.418
15	11 8 51.92	2.0888	6 59 32.5	16.449
16	11 10 57.16	2.0859	6 43 4.6	16.480
17	11 13 2.23	2.0830	6 26 34.9	16.508
18	11 15 7.12	2.0802	6 10 3.7	16.533
19	11 17 11.85	2.0775	5 53 31.0	16.558
20	11 19 16.42	2.0749	5 36 56.8	16.581
21	11 21 20.84	2.0724	5 20 21.3	16.602
22	11 23 25.11	2.0699	5 3 44.5	16.623
23	11 25 29.23	2.0675	4 47 6.5	16.642
24	11 27 33.21	2.0652	N. 4 30 27.5	16.658

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 27 33.21	2.0652	N. 4 30 27.5	16.658
1	11 29 37.05	2.0630	4 13 47.5	16.674
2	11 31 40.77	2.0610	3 57 6.6	16.688
3	11 33 44.37	2.0590	3 40 24.9	16.701
4	11 35 47.85	2.0570	3 23 42.5	16.712
5	11 37 51.21	2.0551	3 6 59.5	16.722
6	11 39 54.46	2.0533	2 50 15.9	16.730
7	11 41 57.61	2.0517	2 33 31.9	16.737
8	11 44 0.66	2.0501	2 16 47.5	16.742
9	11 46 3.62	2.0486	2 0 2.9	16.745
10	11 48 6.49	2.0472	1 43 18.1	16.747
11	11 50 9.28	2.0458	1 26 33.2	16.748
12	11 52 11.98	2.0444	1 9 48.4	16.747
13	11 54 14.61	2.0433	0 53 3.6	16.745
14	11 56 17.18	2.0422	0 36 19.0	16.741
15	11 58 19.68	2.0412	0 19 34.7	16.736
16	12 0 22.12	2.0402	N. 0 2 50.7	16.730
17	12 2 24.51	2.0394	S. 0 13 52.9	16.722
18	12 4 26.85	2.0386	0 30 35.9	16.712
19	12 6 29.14	2.0379	0 47 18.3	16.701
20	12 8 31.40	2.0373	1 4 0.0	16.689
21	12 10 33.62	2.0367	1 20 41.0	16.676
22	12 12 35.81	2.0363	1 37 21.2	16.661
23	12 14 37.98	2.0360	S. 1 54 0.3	16.643

FRIDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 16 40.13	2.0357	S. 2 10 38.3	16.624
1	12 18 42.26	2.0354	2 27 15.2	16.606
2	12 20 44.38	2.0353	2 43 51.0	16.586
3	12 22 46.50	2.0353	3 0 25.5	16.563
4	12 24 48.62	2.0353	3 16 58.6	16.540
5	12 26 50.74	2.0354	3 33 30.3	16.515
6	12 28 52.87	2.0357	3 50 0.4	16.488
7	12 30 55.02	2.0359	4 6 28.9	16.461
8	12 32 57.18	2.0362	4 22 55.7	16.431
9	12 34 59.36	2.0366	4 39 20.6	16.399
10	12 37 1.57	2.0371	4 55 43.6	16.367
11	12 39 3.81	2.0376	5 12 4.7	16.335
12	12 41 6.08	2.0383	5 28 23.8	16.300
13	12 43 8.40	2.0390	5 44 40.7	16.263
14	12 45 10.76	2.0397	6 0 55.4	16.226
15	12 47 13.17	2.0406	6 17 7.8	16.187
16	12 49 15.63	2.0415	6 33 17.9	16.147
17	12 51 18.15	2.0426	6 49 25.5	16.105
18	12 53 20.74	2.0437	7 5 30.5	16.062
19	12 55 23.39	2.0448	7 21 32.9	16.017
20	12 57 26.11	2.0460	7 37 32.6	15.972
21	12 59 28.91	2.0472	7 53 29.5	15.924
22	13 1 31.78	2.0486	8 9 23.5	15.876
23	13 3 34.74	2.0500	8 25 14.6	15.827
24	13 5 37.78	2.0514	S. 8 41 2.7	15.775

SATURDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	13 5 37.78	2.0514	S. 8 41 2.7	15.775
1	13 7 40.91	2.0530	8 56 47.6	15.722
2	13 9 44.14	2.0547	9 12 29.3	15.668
3	13 11 47.47	2.0564	9 28 7.8	15.613
4	13 13 50.90	2.0581	9 43 42.9	15.557
5	13 15 54.44	2.0598	9 59 14.6	15.499
6	13 17 58.08	2.0617	10 14 42.8	15.440
7	13 20 1.84	2.0637	10 30 7.4	15.379
8	13 22 5.72	2.0656	10 45 28.3	15.317
9	13 24 9.71	2.0675	11 0 45.5	15.254
10	13 26 13.83	2.0696	11 15 58.8	15.189
11	13 28 18.08	2.0718	11 31 8.2	15.123
12	13 30 22.46	2.0740	11 46 13.6	15.056
13	13 32 26.97	2.0763	12 1 14.9	14.987
14	13 34 31.62	2.0787	12 16 12.1	14.918
15	13 36 36.41	2.0811	12 31 5.1	14.847
16	13 38 41.35	2.0835	12 45 53.8	14.775
17	13 40 46.43	2.0859	13 0 38.1	14.702
18	13 42 51.66	2.0884	13 15 18.0	14.627
19	13 44 57.04	2.0910	13 29 53.3	14.550
20	13 47 2.58	2.0937	13 44 24.0	14.473
21	13 49 8.28	2.0963	13 58 50.1	14.395
22	13 51 14.14	2.0990	14 13 11.4	14.315
23	13 53 20.16	2.1018	S. 14 27 27.9	14.233

SUNDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 55 26.35	2.1046	S. 14 41 39.4	14.150
1	13 57 32.71	2.1074	14 55 45.9	14.067
2	13 59 39.24	2.1102	15 9 47.4	13.983
3	14 1 45.94	2.1132	15 23 43.8	13.897
4	14 3 52.82	2.1162	15 37 35.0	13.809
5	14 5 59.88	2.1192	15 51 20.9	13.720
6	14 8 7.12	2.1222	16 5 1.4	13.630
7	14 10 14.54	2.1252	16 18 36.5	13.539
8	14 12 22.15	2.1283	16 32 6.1	13.447
9	14 14 29.94	2.1314	16 45 30.1	13.353
10	14 16 37.92	2.1346	16 58 48.5	13.259
11	14 18 46.09	2.1377	17 12 1.2	13.163
12	14 20 54.44	2.1409	17 25 8.1	13.067
13	14 23 2.99	2.1442	17 38 9.2	12.968
14	14 25 11.74	2.1474	17 51 4.3	12.868
15	14 27 20.68	2.1507	18 3 53.4	12.768
16	14 29 29.82	2.1540	18 16 36.5	12.667
17	14 31 39.16	2.1572	18 29 13.4	12.564
18	14 33 48.69	2.1605	18 41 44.1	12.460
19	14 35 58.42	2.1639	18 54 8.6	12.355
20	14 38 8.36	2.1673	19 6 26.7	12.249
21	14 40 18.50	2.1707	19 18 38.4	12.142
22	14 42 28.84	2.1740	19 30 43.7	12.034
23	14 44 39.38	2.1774	19 42 42.5	11.925
24	14 46 50.13	2.1808	S. 19 54 34.7	11.814

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 46 50.13	2.1808	S. 19 54 34.7	11.814
1	14 49 1.08	2.1842	20 6 20.2	11.702
2	14 51 12.23	2.1876	20 17 59.0	11.590
3	14 53 23.59	2.1910	20 29 31.0	11.476
4	14 55 35.15	2.1943	20 40 56.1	11.361
5	14 57 46.91	2.1977	20 52 14.3	11.246
6	14 59 58.88	2.2011	21 3 25.6	11.130
7	15 2 11.05	2.2045	21 14 29.9	11.012
8	15 4 23.42	2.2079	21 25 27.0	10.892
9	15 6 36.00	2.2113	21 36 16.9	10.772
10	15 8 48.78	2.2147	21 46 59.6	10.652
11	15 11 1.76	2.2180	21 57 35.1	10.531
12	15 13 14.94	2.2213	22 8 3.3	10.408
13	15 15 28.32	2.2246	22 18 24.1	10.284
14	15 17 41.90	2.2279	22 28 37.4	10.160
15	15 19 55.67	2.2312	22 38 43.3	10.035
16	15 22 9.64	2.2344	22 48 41.6	9.908
17	15 24 23.80	2.2377	22 58 32.3	9.781
18	15 26 38.16	2.2409	23 8 15.3	9.653
19	15 28 52.71	2.2441	23 17 50.6	9.524
20	15 31 7.45	2.2472	23 27 18.2	9.395
21	15 33 22.37	2.2502	23 36 38.0	9.264
22	15 35 37.48	2.2533	23 45 49.9	9.132
23	15 37 52.77	2.2564	S. 23 54 53.9	9.000

TUESDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 40 8.25	2.2594	S. 24 3 49.9	8.867
1	15 42 23.90	2.2623	24 12 37.9	8.733
2	15 44 39.73	2.2653	24 21 17.9	8.599
3	15 46 55.74	2.2682	24 29 49.8	8.463
4	15 49 11.92	2.2710	24 38 13.5	8.327
5	15 51 28.26	2.2738	24 46 29.0	8.191
6	15 53 44.77	2.2766	24 54 36.4	8.054
7	15 56 1.45	2.2793	25 2 35.5	7.915
8	15 58 18.28	2.2819	25 10 26.2	7.776
9	16 0 35.27	2.2845	25 18 8.6	7.637
10	16 2 52.42	2.2870	25 25 42.7	7.497
11	16 5 9.71	2.2894	25 33 8.3	7.356
12	16 7 27.15	2.2919	25 40 25.4	7.214
13	16 9 44.74	2.2943	25 47 34.0	7.073
14	16 12 2.46	2.2965	25 54 34.1	6.931
15	16 14 20.32	2.2987	26 1 25.7	6.788
16	16 16 38.31	2.3008	26 8 8.7	6.644
17	16 18 56.42	2.3029	26 14 43.0	6.500
18	16 21 14.66	2.3050	26 21 8.7	6.356
19	16 23 33.02	2.3069	26 27 25.7	6.211
20	16 25 51.49	2.3088	26 33 34.0	6.066
21	16 28 10.07	2.3106	26 39 33.6	5.920
22	16 30 28.76	2.3123	26 45 24.4	5.773
23	16 32 47.55	2.3140	26 51 6.4	5.627
24	16 35 6.44	2.3156	S. 26 56 39.6	5.480

WEDNESDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 35 6.44	2.3156	S. 26 56 39.6	5.480
1	16 37 25.42	2.3171	27 2 4.0	5.332
2	16 39 44.49	2.3185	27 7 19.5	5.184
3	16 42 3.64	2.3198	27 12 26.1	5.036
4	16 44 22.87	2.3211	27 17 23.8	4.887
5	16 46 42.17	2.3222	27 22 12.6	4.739
6	16 49 1.53	2.3232	27 26 52.5	4.590
7	16 51 20.96	2.3242	27 31 23.4	4.441
8	16 53 40.44	2.3252	27 35 45.4	4.292
9	16 55 59.98	2.3261	27 39 58.5	4.143
10	16 58 19.57	2.3268	27 44 2.6	3.993
11	17 0 39.20	2.3274	27 47 57.6	3.842
12	17 2 58.86	2.3280	27 51 43.6	3.692
13	17 5 18.56	2.3285	27 55 20.6	3.542
14	17 7 38.28	2.3288	27 58 48.6	3.392
15	17 9 58.02	2.3291	28 2 7.6	3.242
16	17 12 17.78	2.3293	28 5 17.6	3.091
17	17 14 37.54	2.3294	28 8 18.5	2.940
18	17 16 57.31	2.3295	28 11 10.4	2.790
19	17 19 17.08	2.3294	28 13 53.3	2.639
20	17 21 36.84	2.3291	28 16 27.1	2.488
21	17 23 56.58	2.3288	28 18 51.9	2.338
22	17 26 16.30	2.3285	28 21 7.7	2.187
23	17 28 36.00	2.3281	S. 28 23 14.4	2.037

THURSDAY, NOVEMBER 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 30 55.67	2.3275	S. 28 25 12.1	1.887

PHASES OF THE MOON.

		d	h	m
☽ First Quarter. .	Oct.	6	7	1.1
○ Full Moon		14	6	40.8
☾ Last Quarter		21	6	55.7
● New Moon		28	5	57.1

		d	h
☾ Apogee	Oct.	7	13.8
☾ Perigee		22	1.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	29° 2′ 12″	2874	30° 35′ 4″	2891	32° 7′ 34″	2908	33° 39′ 43″	2925
	Antares	E.	31 4 39	2543	29 24 25	2559	27 44 33	2574	26 5 3	2590
	α Aquilæ	E.	85 32 23	3358	84 9 19	3379	82 46 39	3401	81 24 24	3424
2	Sun	W.	41 15 1	3011	42 45 0	3028	44 14 38	3045	45 43 55	3062
	α Aquilæ	E.	74 40 8	3560	73 20 50	3590	72 2 5	3623	70 43 55	3657
	Fomalhaut	E.	99 42 24	2906	98 10 13	2920	96 38 20	2934	95 6 44	2949
3	Sun	W.	53 5 14	3143	54 32 31	3159	55 59 29	3175	57 26 8	3190
	α Aquilæ	E.	64 22 43	3852	63 8 34	3896	61 55 10	3943	60 42 34	3992
	Fomalhaut	E.	87 33 24	3023	86 3 40	3039	84 34 15	3054	83 5 9	3069
4	Sun	W.	64 35 1	3261	65 59 58	3274	67 24 40	3287	68 49 7	3300
	α Aquilæ	E.	54 52 31	4282	53 45 22	4351	52 39 16	4494	51 34 16	4501
	Fomalhaut	E.	75 44 24	3148	74 17 12	3164	72 50 20	3179	71 23 46	3196
	α Pegasi	E.	97 37 10	3178	96 10 35	3188	94 44 12	3198	93 18 1	3209
5	Sun	W.	75 47 56	3355	77 11 4	3364	78 34 2	3373	79 56 49	3381
	Antares	W.	19 37 13	2985	21 7 44	2994	22 38 4	3002	24 8 14	3010
	Fomalhaut	E.	64 15 46	3277	62 51 8	3294	61 26 49	3311	60 2 50	3328
	α Pegasi	E.	86 10 14	3261	84 45 17	3271	83 20 32	3282	81 55 59	3291
6	Sun	W.	86 48 29	3417	88 10 26	3423	89 32 16	3429	90 54 0	3433
	Antares	W.	31 36 48	3043	33 6 8	3048	34 35 21	3052	36 4 29	3057
	Fomalhaut	E.	53 8 7	3423	51 46 16	3444	50 24 49	3466	49 3 47	3488
	α Pegasi	E.	74 56 6	3340	73 32 41	3351	72 9 28	3360	70 46 26	3370
	Mars	E.	111 38 12	2971	110 7 23	2974	108 36 38	2978	107 5 58	2981
7	Sun	W.	97 41 36	3448	99 2 58	3449	100 24 19	3450	101 45 39	3450
	Antares	W.	43 29 3	3069	44 57 50	3071	46 26 35	3072	47 55 19	3072
	Fomalhaut	E.	42 25 33	3630	41 7 31	3666	39 50 8	3705	38 33 26	3746
	α Pegasi	E.	63 54 3	3420	62 32 9	3431	61 10 27	3442	59 48 58	3454
	Mars	E.	99 33 24	2990	98 2 59	2991	96 32 35	2991	95 2 11	2990
	α Arietis	E.	104 52 25	3103	103 24 19	3105	101 56 15	3105	100 28 11	3105
8	Sun	W.	108 32 26	3444	109 53 53	3441	111 15 23	3438	112 36 56	3434
	Antares	W.	55 19 7	3066	56 47 58	3063	58 16 53	3060	59 45 51	3056
	α Pegasi	E.	53 4 59	3521	51 44 58	3537	50 25 15	3555	49 5 51	3575
	Mars	E.	87 29 51	2982	85 59 16	2979	84 28 37	2976	82 57 54	2972
	α Arietis	E.	93 7 38	3097	91 39 25	3095	90 11 9	3092	88 42 50	3088
9	Sun	W.	119 25 56	3409	120 48 2	3402	122 10 16	3396	123 32 37	3389
	Antares	W.	67 11 58	3033	68 41 30	3027	70 11 9	3021	71 40 56	3014
	Mars	E.	75 22 58	2947	73 51 39	2942	72 20 13	2935	70 48 39	2929
	α Arietis	E.	81 19 59	3065	79 51 7	3060	78 22 8	3054	76 53 2	3047
	Aldebaran	E.	112 5 18	3115	110 37 27	3107	109 9 26	3100	107 41 16	3091
10	Sun	W.	130 26 34	3347	131 49 51	3338	133 13 18	3329	134 36 56	3319
	Antares	W.	79 12 6	2975	80 42 50	2966	82 13 45	2958	83 44 51	2948
	Mars	E.	63 8 36	2891	61 36 6	2883	60 3 26	2875	58 30 35	2866
	α Arietis	E.	69 25 27	3012	67 55 29	3004	66 25 21	2996	64 55 3	2987
	Aldebaran	E.	100 17 53	3048	98 48 40	3039	97 19 15	3029	95 49 38	3020

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	Sun	W.	35° 11′ 30″	2942	36° 42′ 55″	2959	38° 13′ 59″	2977	39° 44′ 41″	2994
	Antares	E.	24 25 54	3607	22 47 8	3622	21 8 43	3638	19 30 40	3654
	α Aquilæ	E.	80 2 35	3449	78 41 14	3474	77 20 21	3502	75 59 59	3530
2	Sun	W.	47 12 51	3078	48 41 27	3096	50 9 42	3111	51 37 38	3126
	α Aquilæ	E.	69 26 22	3693	68 9 27	3729	66 53 11	3768	65 37 36	3809
	Fomalhaut	E.	93 35 27	2963	92 4 28	2978	90 33 48	2993	89 3 27	3008
3	Sun	W.	58 52 29	3204	60 18 33	3220	61 44 19	3234	63 9 48	3247
	α Aquilæ	E.	59 30 47	4044	58 19 51	4099	57 9 48	4157	56 0 41	4217
	Fomalhaut	E.	81 36 22	3085	80 7 54	3101	78 39 45	3116	77 11 55	3132
4	Sun	W.	70 13 19	3311	71 37 18	3323	73 1 3	3333	74 24 36	3345
	α Aquilæ	E.	50 30 25	4585	49 27 47	4672	48 26 24	4768	47 26 21	4869
	Fomalhaut	E.	69 57 32	3212	68 31 37	3228	67 6 1	3244	65 40 44	3260
	α Pegasi	E.	91 52 3	3220	90 26 17	3231	89 0 44	3241	87 35 23	3251
5	Sun	W.	81 19 27	3390	82 41 55	3398	84 4 14	3405	85 26 25	3411
	Antares	W.	25 38 14	3018	27 8 5	3025	28 37 47	3031	30 7 21	3037
	Fomalhaut	E.	58 39 11	3346	57 15 53	3365	55 52 56	3383	54 30 20	3403
	α Pegasi	E.	80 31 37	3301	79 7 27	3312	77 43 29	3321	76 19 42	3331
6	Sun	W.	92 15 39	3438	93 37 13	3440	94 58 44	3444	96 20 11	3446
	Antares	W.	37 33 31	3060	39 2 29	3064	40 31 23	3066	42 0 14	3068
	Fomalhaut	E.	47 43 10	3514	46 23 1	3539	45 3 20	3567	43 44 10	3598
	α Pegasi	E.	69 23 35	3379	68 0 55	3389	66 38 26	3400	65 16 9	3409
	Mars	E.	105 35 21	2984	104 4 48	2986	102 34 18	2988	101 3 50	2989
7	Sun	W.	103 6 59	3450	104 28 19	3449	105 49 40	3448	107 11 2	3446
	Antares	W.	49 24 3	3072	50 52 47	3071	52 21 32	3069	53 50 19	3069
	Fomalhaut	E.	37 17 28	3794	36 2 20	3848	34 48 7	3907	33 34 54	3971
	α Pegasi	E.	58 27 42	3465	57 6 39	3479	55 45 51	3491	54 25 17	3506
	Mars	E.	93 31 46	2989	92 1 20	2989	90 30 53	2986	89 0 23	2985
	α Arietis	E.	99 0 7	3104	97 32 2	3103	96 3 56	3101	94 35 48	3100
8	Sun	W.	113 58 34	3431	115 20 16	3425	116 42 4	3421	118 3 57	3415
	Antares	W.	61 14 54	3053	62 44 1	3048	64 13 14	3043	65 42 33	3039
	α Pegasi	E.	47 46 49	3596	46 28 10	3619	45 9 56	3645	43 52 10	3672
	Mars	E.	81 27 6	2968	79 56 13	2963	78 25 14	2958	76 54 9	2954
	α Arietis	E.	87 14 26	3085	85 45 58	3080	84 17 24	3076	82 48 45	3070
9	Sun	W.	124 55 6	3381	126 17 44	3373	127 40 31	3365	129 3 28	3357
	Antares	W.	73 10 52	3007	74 40 56	2999	76 11 10	2992	77 41 33	2984
	Mars	E.	69 16 57	2922	67 45 6	2914	66 13 5	2907	64 40 55	2900
	α Arietis	E.	75 23 48	3041	73 54 26	3034	72 24 55	3027	70 55 16	3019
	Aldebaran	E.	106 12 56	3083	104 44 26	3075	103 15 46	3066	101 46 55	3057
10	Sun	W.	136 0 46	3309	137 24 47	3298	138 49 1	3288	140 13 27	3277
	Antares	W.	85 16 9	2939	86 47 39	2929	88 19 21	2919	89 51 16	2909
	Mars	E.	56 57 33	2857	55 24 19	2848	53 50 54	2839	52 17 17	2831
	α Arietis	E.	63 24 34	2979	61 53 55	2970	60 23 5	2962	58 52 4	2953
	Aldebaran	E.	94 19 50	3009	92 49 49	3000	91 19 36	2989	89 49 10	2980

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
11	Antares	W.	91° 23′ 24″	2898	92° 55′ 45″	2887	94° 28′ 20″	2877	96° 1′ 8″	2866
	α Aquilæ	W.	49 1 55	4567	50 4 48	4482	51 8 56	4401	52 14 16	4327
	Mars	E.	50 43 29	2821	49 9 29	2811	47 35 16	2803	46 0 52	2793
	α Arietis	E.	57 20 52	2944	55 49 29	2935	54 17 54	2926	52 46 8	2917
	Aldebaran	E.	88 18 32	2969	86 47 40	2959	85 16 36	2949	83 45 19	2938
	Jupiter	E.	116 11 16	2939	114 39 46	2927	113 8 2	2916	111 36 3	2904
12	α Aquilæ	W.	57 56 52	4018	59 8 14	3967	60 20 26	3919	61 33 27	3872
	Mars	E.	38 5 49	2749	36 30 14	2741	34 54 29	2734	33 18 34	2726
	α Arietis	E.	45 4 32	2875	43 31 41	2867	41 58 40	2859	40 25 29	2853
	Aldebaran	E.	76 5 30	2885	74 32 52	2874	73 0 0	2864	71 26 55	2854
	Jupiter	E.	103 52 22	2845	102 18 52	2832	100 45 6	2820	99 11 4	2808
13	α Aquilæ	W.	67 49 25	3680	69 6 33	3648	70 24 16	3618	71 42 31	3588
	Fomalhaut	W.	38 17 35	3354	39 40 44	3301	41 4 54	3253	42 30 1	3207
	Aldebaran	E.	63 38 15	2805	62 3 53	2796	60 29 20	2787	58 54 35	2779
	Jupiter	E.	91 17 0	2748	89 41 24	2736	88 5 32	2724	86 29 24	2713
	Pollux	E.	106 45 8	2717	105 8 51	2706	103 32 19	2694	101 55 31	2683
14	α Aquilæ	W.	78 21 7	3468	79 42 7	3447	81 3 30	3430	82 25 13	3412
	Fomalhaut	W.	49 47 51	3026	51 17 31	2997	52 47 47	2970	54 18 37	2945
	Aldebaran	E.	50 58 20	2744	49 22 39	2740	47 46 52	2736	46 11 0	2732
	Jupiter	E.	78 24 56	2656	76 47 17	2645	75 9 23	2635	73 31 15	2624
	Pollux	E.	93 47 40	2626	92 9 20	2615	90 30 45	2604	88 51 55	2593
15	α Aquilæ	W.	89 18 13	3346	90 41 31	3337	92 5 0	3330	93 28 37	3323
	Fomalhaut	W.	62 0 19	2837	63 33 59	2818	65 8 3	2801	66 42 29	2785
	α Pegasi	W.	41 34 46	3200	43 0 55	3150	44 28 4	3105	45 56 8	3063
	Aldebaran	E.	38 11 7	2737	36 35 16	2744	34 59 34	2753	33 24 4	2764
	Jupiter	E.	65 17 4	2574	63 37 34	2565	61 57 51	2556	60 17 56	2548
	Pollux	E.	80 34 8	2542	78 53 53	2533	77 13 25	2522	75 32 43	2514
16	Fomalhaut	W.	74 39 39	2716	76 15 57	2704	77 52 31	2693	79 29 20	2684
	α Pegasi	W.	53 28 2	2899	55 0 22	2874	56 33 14	2850	58 6 37	2826
	Jupiter	E.	51 55 34	2510	50 14 35	2504	48 33 27	2498	46 52 11	2492
	Pollux	E.	67 6 8	2471	65 24 14	2462	63 42 8	2455	61 59 51	2448
	Regulus	E.	103 53 16	2472	102 11 23	2464	100 29 19	2456	98 47 4	2448
17	Fomalhaut	W.	87 36 30	2642	89 14 28	2636	90 52 34	2630	92 30 48	2624
	α Pegasi	W.	66 0 3	2738	67 35 52	2725	69 11 59	2711	70 48 24	2698
	Mars	W.	30 12 17	2371	31 56 34	2358	33 41 9	2347	35 26 0	2337
	α Arietis	W.	22 25 46	2624	24 4 9	2590	25 43 18	2561	27 23 6	2538
	Jupiter	E.	38 24 7	2473	36 42 16	2471	35 0 22	2470	33 18 26	2470
	Pollux	E.	53 25 56	2414	51 42 41	2408	49 59 17	2402	48 15 45	2396
	Regulus	E.	90 13 13	2414	88 29 58	2408	86 46 35	2402	85 3 3	2396
18	α Pegasi	W.	78 54 15	2650	80 32 2	2642	82 10 0	2635	83 48 7	2629
	Mars	W.	44 13 31	2297	45 59 35	2291	47 45 48	2285	49 32 10	2279
	α Arietis	W.	35 49 1	2457	37 31 15	2445	39 13 46	2434	40 56 32	2425
	Pollux	E.	39 36 8	2371	37 51 52	2368	36 7 31	2364	34 23 4	2359
	Regulus	E.	76 23 23	2370	74 39 5	2366	72 54 41	2362	71 10 11	2357
	Sun	E.	132 55 11	2692	131 18 20	2687	129 41 22	2681	128 4 17	2677

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
11	Antares	W.	97° 34′ 11″	2855	99° 7′ 28″	2844	100° 40′ 59″	2832	102° 14′ 45″	2821
	α Aquilæ	W.	53 20 44	4256	54 28 17	4192	55 36 51	4130	56 46 24	4073
	MARS	E.	44 26 15	2784	42 51 26	2775	41 16 25	2766	39 41 13	2757
	α Arietis	E.	51 14 11	2908	49 42 2	2900	48 9 43	2891	46 37 13	2883
	Aldebaran	E.	82 13 48	2927	80 42 4	2916	79 10 6	2906	77 37 55	2895
	JUPITER	E.	110 3 49	2892	108 31 20	2880	106 58 36	2869	105 25 37	2856
12	α Aquilæ	W.	62 47 15	3829	64 1 47	3790	65 17 0	3751	66 32 53	3714
	MARS	E.	31 42 29	2720	30 6 16	2715	28 29 56	2711	26 53 31	2710
	α Arietis	E.	38 52 10	2847	37 18 43	2842	35 45 9	2837	34 11 29	2834
	Aldebaran	E.	69 53 37	2843	68 20 5	2834	66 46 21	2824	65 12 24	2815
	JUPITER	E.	97 36 47	2796	96 2 14	2784	94 27 25	2772	92 52 20	2760
13	α Aquilæ	W.	73 1 18	3569	74 20 34	3535	75 40 19	3512	77 0 30	3488
	Fomalhaut	W.	43 56 2	3166	45 22 52	3127	46 50 29	3091	48 18 49	3057
	Aldebaran	E.	57 19 40	2771	55 44 34	2763	54 9 18	2756	52 33 53	2750
	JUPITER	E.	84 53 1	2701	83 16 23	2689	81 39 29	2678	80 2 20	2667
	Pollux	E.	100 18 28	2671	98 41 9	2660	97 3 35	2648	95 25 45	2637
14	α Aquilæ	W.	83 47 16	3396	85 9 37	3382	86 32 14	3368	87 55 7	3357
	Fomalhaut	W.	55 49 59	2920	57 21 52	2898	58 54 14	2876	60 27 4	2856
	Aldebaran	E.	44 35 3	2730	42 59 3	2730	41 23 3	2730	39 47 3	2733
	JUPITER	E.	71 52 52	2613	70 14 15	2604	68 35 25	2593	66 56 21	2584
	Pollux	E.	87 12 50	2583	85 33 31	2572	83 53 57	2561	82 14 9	2552
15	α Aquilæ	W.	94 52 22	3318	96 16 13	3314	97 40 8	3313	99 4 5	3312
	Fomalhaut	W.	68 17 17	2769	69 52 25	2755	71 27 52	2741	73 3 37	2729
	α Pegasi	W.	47 25 3	3025	48 54 45	2969	50 25 11	2957	51 56 18	2927
	Aldebaran	E.	31 48 49	2780	30 13 55	2801	28 39 29	2828	27 5 38	2862
	JUPITER	E.	58 37 50	2540	56 57 32	2532	55 17 3	2524	53 36 23	2517
	Pollux	E.	73 51 49	2504	72 10 42	2496	70 29 23	2487	68 47 51	2479
16	Fomalhaut	W.	81 6 22	2674	82 43 37	2665	84 21 4	2657	85 58 42	2649
	α Pegasi	W.	59 40 28	2806	61 14 46	2788	62 49 29	2771	64 24 35	2754
	JUPITER	E.	45 10 47	2487	43 29 16	2482	41 47 38	2479	40 5 55	2475
	Pollux	E.	60 17 24	2440	58 34 46	2433	56 51 59	2426	55 9 2	2420
	Regulus	E.	97 4 38	2441	95 22 2	2433	93 39 15	2427	91 56 19	2420
17	Fomalhaut	W.	94 9 10	2621	95 47 37	2616	97 26 10	2613	99 4 47	2610
	α Pegasi	W.	72 25 1	2687	74 2 1	2677	75 39 14	2666	77 16 39	2658
	MARS	W.	37 11 5	2328	38 56 24	2320	40 41 55	2311	42 27 38	2304
	α Arietis	W.	29 3 26	2517	30 44 15	2499	32 25 29	2484	34 7 5	2470
	JUPITER	E.	31 36 31	2472	29 54 38	2475	28 12 49	2480	26 31 8	2489
	Pollux	E.	46 32 4	2391	44 48 16	2385	43 4 20	2380	41 20 17	2376
	Regulus	E.	83 19 22	2390	81 35 33	2385	79 51 37	2380	78 7 34	2375
18	α Pegasi	W.	85 26 22	2624	87 4 44	2619	88 43 13	2615	90 21 47	2611
	MARS	W.	51 18 41	2273	53 5 20	2268	54 52 6	2264	56 38 59	2259
	α Arietis	W.	42 39 31	2417	44 22 42	2408	46 6 5	2401	47 49 39	2394
	Pollux	E.	32 38 31	2357	30 53 54	2353	29 9 12	2350	27 24 26	2348
	Regulus	E.	69 25 34	2353	67 40 51	2349	65 56 3	2346	64 11 10	2342
	SUN	E.	126 27 6	2672	124 49 49	2668	123 12 26	2664	121 34 58	2660

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
19	**Mars**	W.	58° 25′ 59″	2955	60° 13′ 5″	2951	62° 0′ 17″	2947	63° 47′ 35″	2943
	α Arietis	W.	49 33 22	2388	51 17 14	2382	53 1 15	2377	54 45 23	2371
	Regulus	E.	62 26 12	2339	60 41 9	2336	58 56 2	2333	57 10 50	2331
	Sun	E.	119 57 24	2656	118 19 45	2653	116 42 2	2649	115 4 14	2646
20	**Mars**	W.	72 45 18	2228	74 33 4	2226	76 20 53	2224	78 8 45	2221
	α Arietis	W.	63 27 44	2351	65 12 29	2348	66 57 19	2345	68 42 13	2342
	Aldebaran	W.	33 28 56	2543	35 9 10	2520	36 49 55	2502	38 31 6	2485
	Regulus	E.	48 23 57	2319	46 38 25	2317	44 52 50	2315	43 7 13	2313
	Venus	E.	96 31 23	2720	94 55 10	2718	93 18 54	2715	91 42 34	2713
	Sun	E.	106 54 15	2632	105 16 4	2630	103 37 50	2628	101 59 33	2626
21	**Mars**	W.	87 8 52	2212	88 57 1	2212	90 45 11	2210	92 33 23	2209
	α Arietis	W.	77 27 41	2331	79 12 55	2329	80 58 12	2328	82 43 31	2326
	Aldebaran	W.	47 1 55	2426	48 41 50	2420	50 27 56	2412	52 11 13	2405
	Venus	E.	83 40 21	2706	82 3 49	2704	80 27 15	2703	78 50 39	2702
	Sun	E.	93 47 32	2618	92 9 1	2617	90 30 29	2615	88 51 55	2614
22	α Arietis	W.	91 30 29	2323	93 15 55	2322	95 1 22	2322	96 46 49	2322
	Aldebaran	W.	60 49 41	2382	62 33 41	2379	64 17 46	2377	66 1 54	2374
	Jupiter	W.	32 25 10	2362	34 9 40	2355	35 54 20	2349	37 39 8	2345
	Venus	E.	70 47 26	2699	69 10 45	2700	67 34 5	2700	65 57 25	2700
	Sun	E.	80 38 47	2612	79 0 8	2611	77 21 28	2611	75 42 48	2612
23	Aldebaran	W.	74 43 16	2368	76 27 37	2368	78 11 58	2368	79 56 19	2368
	Jupiter	W.	46 24 27	2331	48 9 41	2331	49 54 56	2329	51 40 13	2329
	Pollux	W.	30 55 42	2300	32 41 41	2301	34 27 39	2301	36 13 37	2302
	Sun	E.	67 29 38	2615	65 51 3	2616	64 12 30	2617	62 33 58	2619
24	Aldebaran	W.	88 37 44	2375	90 21 54	2378	92 6 0	2381	93 50 2	2384
	Jupiter	W.	60 26 36	2331	62 11 50	2333	63 57 1	2335	65 42 10	2337
	Pollux	W.	45 3 3	2309	46 48 49	2312	48 34 31	2314	50 20 10	2317
	Sun	E.	54 22 1	2631	52 43 48	2634	51 5 39	2638	49 27 35	2641
25	**Jupiter**	W.	74 26 57	2353	76 11 40	2356	77 56 18	2361	79 40 49	2365
	Pollux	W.	59 7 15	2335	60 52 24	2339	62 37 26	2344	64 22 22	2349
	Regulus	W.	22 24 43	2355	24 9 22	2357	25 53 59	2359	27 38 32	2362
	Sun	E.	41 18 39	2665	39 41 12	2670	38 3 52	2677	36 26 41	2684
26	**Jupiter**	W.	88 21 36	2394	90 5 20	2400	91 48 55	2407	93 32 20	2414
	Pollux	W.	73 5 4	2378	74 49 10	2384	76 33 7	2391	78 16 54	2398
	Regulus	W.	36 19 58	2385	38 3 54	2391	39 47 41	2398	41 31 19	2405
	Sun	E.	28 23 14	2725	26 47 8	2735	25 11 15	2746	23 35 36	2760
30	**Sun**	W.	21 41 45	3102	23 9 52	3111	24 37 48	3121	26 5 32	3133
	α Aquilæ	E.	68 11 10	3686	66 54 8	3722	65 37 44	3761	64 22 1	3801
	Fomalhaut	E.	92 10 40	2944	90 39 17	2957	89 8 10	2969	87 37 19	2983
31	**Sun**	W.	33 20 43	3192	34 47 2	3204	36 13 7	3216	37 38 57	3228
	α Aquilæ	E.	58 14 43	4043	57 3 46	4101	55 53 45	4162	54 44 43	4227
	Fomalhaut	E.	80 7 23	3054	78 38 17	3069	77 9 30	3085	75 41 2	3101
	α Pegasi	E.	101 54 15	3096	100 26 1	3106	98 57 59	3115	97 30 8	3126

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
19	Mars	W.	65° 34′ 58″	2940	67° 22′ 26″	2937	69° 9′ 59″	2934	70° 57′ 36″	2931
	α Arietis	W.	56 29 39	2367	58 14 1	2363	59 58 30	2359	61 43 4	2355
	Regulus	E.	55 25 35	2398	53 40 16	2395	51 54 53	2393	50 9 27	2390
	Sun	E.	113 26 22	2643	111 48 26	2640	110 10 26	2638	108 32 22	2635
20	Mars	W.	79 56 41	2219	81 44 40	2218	83 32 41	2216	85 20 45	2214
	α Arietis	W.	70 27 12	2339	72 12 14	2337	73 57 20	2335	75 42 29	2333
	Aldebaran	W.	40 12 40	2471	41 54 34	2458	43 36 46	2446	45 19 13	2437
	Regulus	E.	41 21 33	2313	39 35 52	2311	37 50 9	2311	36 4 25	2311
	Venus	E.	90 6 12	2712	88 29 48	2710	86 53 21	2708	85 16 52	2707
	Sun	E.	100 21 14	2624	98 42 52	2622	97 4 27	2621	95 26 1	2619
21	Mars	W.	94 21 37	2208	95 9 52	2208	97 58 8	2207	99 46 25	2207
	α Arietis	W.	84 28 52	2396	86 14 14	2394	87 59 38	2394	89 45 3	2393
	Aldebaran	W.	53 54 40	2400	55 38 15	2395	57 21 57	2390	59 5 46	2386
	Venus	E.	77 14 2	2701	75 37 24	2701	74 0 46	2700	72 24 6	2700
	Sun	E.	87 13 19	2614	85 34 43	2612	83 56 5	2612	82 17 26	2612
22	α Arietis	W.	98 32 15	2322	100 17 41	2324	102 3 5	2325	103 48 28	2326
	Aldebaran	W.	67 46 6	2373	69 30 20	2371	71 14 37	2369	72 58 56	2368
	Jupiter	W.	39 24 2	2341	41 9 2	2337	42 54 7	2335	44 39 16	2333
	Venus	E.	64 20 45	2701	62 44 6	2701	61 7 28	2702	59 30 51	2703
	Sun	E.	74 4 9	2612	72 25 30	2612	70 46 52	2612	69 8 14	2614
23	Aldebaran	W.	81 40 39	2369	83 24 58	2370	85 9 16	2372	86 53 31	2373
	Jupiter	W.	53 25 30	2328	55 10 48	2329	56 56 5	2330	58 41 21	2331
	Pollux	W.	37 59 34	2303	39 45 29	2304	41 31 23	2306	43 17 14	2307
	Sun	E.	60 55 29	2691	59 17 3	2693	57 38 39	2695	56 0 18	2698
24	Aldebaran	W.	95 33 59	2388	97 17 51	2391	99 1 38	2396	100 45 18	2401
	Jupiter	W.	67 27 15	2339	69 12 17	2342	70 57 15	2346	72 42 8	2348
	Pollux	W.	52 5 44	2320	53 51 14	2323	55 36 40	2327	57 22 0	2331
	Sun	E.	47 49 36	2646	46 11 43	2649	44 33 55	2655	42 56 14	2659
25	Jupiter	W.	81 25 14	2371	83 9 31	2375	84 53 41	2381	86 37 43	2387
	Pollux	W.	66 7 10	2354	67 51 51	2359	69 36 24	2365	71 20 49	2372
	Regulus	W.	29 23 1	2366	31 7 25	2370	32 51 43	2375	34 35 54	2380
	Sun	E.	34 49 39	2690	33 12 46	2698	31 36 4	2707	29 59 33	2716
26	Jupiter	W.	95 15 35	2422	96 58 39	2429	98 41 32	2438	100 24 13	2446
	Pollux	W.	80 0 31	2406	81 43 57	2415	83 27 11	2422	85 10 14	2432
	Regulus	W.	43 14 47	2412	44 58 5	2419	46 41 13	2427	48 24 9	2435
	Sun	E.	22 0 16	2775	20 25 16	2791	18 50 36	2806	17 16 16	2825
30	Sun	W.	27 33 2	3144	29 0 18	3155	30 27 21	3168	31 54 9	3179
	α Aquilæ	E.	63 7 0	3845	61 52 44	3890	60 39 14	3938	59 26 33	3989
	Fomalhaut	E.	86 6 45	2997	84 36 28	3011	83 6 29	3025	81 36 47	3039
31	Sun	W.	39 4 33	3240	40 29 55	3253	41 55 2	3265	43 19 55	3276
	α Aquilæ	E.	53 36 42	4295	52 29 45	4369	51 23 56	4448	50 19 18	4532
	Fomalhaut	E.	74 12 53	3116	72 45 3	3133	71 17 33	3148	69 50 22	3166
	α Pegasi	E.	96 2 30	3136	94 35 4	3147	93 7 51	3158	91 40 51	3168

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Thur.	1	14 26 40.95	9.808	S. 14 31 38.6	-47.97	16 9.77	66.97	16 18.74	0.049
Frid.	2	14 30 36.72	9.841	14 50 42.8	47.37	16 10.02	67.08	16 19.50	0.016
Sat.	3	14 34 33.30	9.874	15 9 32.5	46.75	16 10.27	67.19	16 19.48	0.018
SUN.	4	14 38 30.68	9.907	15 28 7.2	-46.12	16 10.52	67.31	16 18.66	0.051
Mon.	5	14 42 28.87	9.941	15 46 26.5	45.48	16 10.77	67.43	16 17.04	0.085
Tues.	6	14 46 27.87	9.975	16 4 30.0	44.81	16 11.02	67.55	16 14.59	0.119
Wed.	7	14 50 27.69	10.010	16 22 17.3	-44.12	16 11.26	67.67	16 11.34	0.153
Thur.	8	14 54 28.34	10.044	16 39 48.0	43.42	16 11.50	67.79	16 7.26	0.167
Frid.	9	14 58 29.82	10.079	16 57 1.7	42.71	16 11.73	67.91	16 2.35	0.222
Sat.	10	15 2 32.13	10.114	17 13 58.1	-41.98	16 11.96	68.03	15 56.61	0.257
SUN.	11	15 6 35.29	10.149	17 30 36.7	41.23	16 12.19	68.15	15 50.02	0.292
Mon.	12	15 10 39.29	10.184	17 46 57.2	40.47	16 12.41	68.27	15 42.60	0.327
Tues.	13	15 14 44.14	10.220	18 2 59.2	-39.69	16 12.63	68.39	15 34.33	0.362
Wed.	14	15 18 49.83	10.255	18 18 42.4	38.89	16 12.85	68.51	15 25.22	0.397
Thur.	15	15 22 56.38	10.291	18 34 6.3	38.08	16 13.06	68.62	15 15.25	0.433
Frid.	16	15 27 3.79	10.326	18 49 10.6	-37.26	16 13.26	68.74	15 4.43	0.469
Sat.	17	15 31 12.05	10.362	19 3 54.9	36.42	16 13.46	68.85	14 52.76	0.504
SUN.	18	15 35 21.16	10.397	19 18 18.8	35.56	16 13.66	68.97	14 40.24	0.539
Mon.	19	15 39 31.12	10.432	19 32 22.0	-34.69	16 13.85	69.08	14 26.88	0.574
Tues.	20	15 43 41.92	10.467	19 46 4.1	33.80	16 14.04	69.19	14 12.67	0.609
Wed.	21	15 47 53.56	10.502	19 59 24.6	32.90	16 14.23	69.30	13 57.64	0.643
Thur.	22	15 52 6.01	10.536	20 12 23.4	-31.98	16 14.41	69.41	13 41.79	0.677
Frid.	23	15 56 19.27	10.569	20 24 59.8	31.04	16 14.59	69.51	13 25.12	0.711
Sat.	24	16 0 33.34	10.602	20 37 13.6	30.09	16 14.76	69.62	13 7.67	0.744
SUN.	25	16 4 48.18	10.634	20 49 4.5	-29.13	16 14.94	69.73	12 49.43	0.776
Mon.	26	16 9 3.78	10.665	21 0 32.0	28.15	16 15.11	69.83	12 30.44	0.807
Tues.	27	16 13 20.13	10.696	21 11 35.8	27.15	16 15.28	69.93	12 10.70	0.837
Wed.	28	16 17 37.20	10.725	21 22 15.6	-26.14	16 15.44	70.02	11 50.25	0.867
Thur.	29	16 21 54.97	10.754	21 32 31.0	25.12	16 15.60	70.12	11 29.09	0.896
Frid.	30	16 26 13.41	10.782	21 42 21.8	24.09	16 15.76	70.21	11 7.27	0.923
Sat.	31	16 30 32.50	10.809	S. 21 51 47.6	-23.05	16 15.92	70.29	10 44.80	0.949

NOTE.—The mean time of semidiameter passing may be found by subtracting $0^s.19$ from the sidereal time.

The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be Added to Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.			
		h m s	s	° ′ ″	″	m s	s	h m s
Thur.	1	14 26 43.61	9.808	S. 14 31 51.6	−47.97	16 18.74	0.048	14 43 2.35
Frid.	2	14 30 39.40	9.841	14 50 55.7	47.37	16 19.51	0.015	14 46 58.91
Sat.	3	14 34 35.99	9.874	15 9 45.2	46.75	16 19.48	0.018	14 50 55.46
SUN.	4	14 38 33.38	9.907	15 28 19.8	−46.12	16 18.64	0.051	14 54 52.02
Mon.	5	14 42 31.57	9.941	15 46 38.8	45.47	16 17.01	0.085	14 58 48.58
Tues.	6	14 46 30.57	9.975	16 4 42.1	44.80	16 14.56	0.119	15 2 45.13
Wed.	7	14 50 30.40	10.010	16 22 29.2	−44.11	16 11.29	0.153	15 6 41.69
Thur.	8	14 54 31.04	10.044	16 39 59.6	43.41	16 7.20	0.187	15 10 38.24
Frid.	9	14 58 32.52	10.079	16 57 13.1	42.70	16 2.29	0.222	15 14 34.80
Sat.	10	15 2 34.82	10.114	17 14 9.2	−41.97	15 56.54	0.257	15 18 31.36
SUN.	11	15 6 37.97	10.149	17 30 47.5	41.22	15 49.94	0.292	15 22 27.91
Mon.	12	15 10 41.96	10.184	17 47 7.8	40.46	15 42.51	0.327	15 26 24.47
Tues.	13	15 14 46.79	10.219	18 3 9.5	−39.68	15 34.24	0.362	15 30 21.03
Wed.	14	15 18 52.47	10.254	18 18 52.3	38.88	15 25.11	0.397	15 34 17.58
Thur.	15	15 22 59.00	10.290	18 34 15.9	38.07	15 15.14	0.433	15 38 14.14
Frid.	16	15 27 6.39	10.325	18 49 19.9	−37.25	15 4.31	0.469	15 42 10.70
Sat.	17	15 31 14.62	10.361	19 4 3.9	36.41	14 52.63	0.504	15 46 7.26
SUN.	18	15 35 23.71	10.396	19 18 27.5	35.55	14 40.11	0.539	15 50 3.81
Mon.	19	15 39 33.63	10.431	19 32 30.3	−34.68	14 26.74	0.574	15 54 0.37
Tues.	20	15 43 44.40	10.466	19 46 12.0	33.79	14 12.53	0.609	15 57 56.93
Wed.	21	15 47 56.00	10.500	19 59 32.3	32.89	13 57.49	0.644	16 1 53.49
Thur.	22	15 52 8.41	10.534	20 12 30.6	−31.97	13 41.63	0.678	16 5 50.04
Frid.	23	15 56 21.64	10.567	20 25 6.7	31.03	13 24.96	0.711	16 9 46.60
Sat.	24	16 0 35.65	10.600	20 37 20.2	30.08	13 7.51	0.744	16 13 43.16
SUN.	25	16 4 50.45	10.632	20 49 10.7	−29.12	12 49.27	0.776	16 17 39.72
Mon.	26	16 9 6.01	10.663	21 0 37.8	28.14	12 30.27	0.807	16 21 36.28
Tues.	27	16 13 22.30	10.694	21 11 41.2	27.14	12 10.53	0.837	16 25 32.83
Wed.	28	16 17 39.32	10.723	21 22 20.7	−26.13	11 50.08	0.867	16 29 29.39
Thur.	29	16 21 57.03	10.752	21 32 35.8	25.11	11 28.92	0.896	16 33 25.95
Frid.	30	16 26 15.40	10.779	21 42 26.2	24.08	11 7.10	0.923	16 37 22.51
Sat.	31	16 30 34.44	10.806	S. 21 51 51.7	−23.04	10 44.63	0.949	16 41 19.06

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign — prefixed to the hourly change of declination indicates that south declinations are increasing.

Diff. for 1 Hour, +9s.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S							Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.	Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.		
		λ	λ′						
		° ′ ″	′ ″	″	″				h m s
1	305	219 4 53.4	4 12.4	150.28	− 0.55	9.9965055	−47.2		9 15 26.40
2	306	220 5 0.8	4 19.6	150.34	0.56	9.9963925	46.9		9 11 30.49
3	307	221 5 9.9	4 28.6	150.41	0.52	9.9962802	46.6		9 7 34.58
4	308	222 5 20.5	4 39.0	150.47	− 0.46	9.9961688	−46.2		9 3 38.67
5	309	223 5 32.6	4 51.0	150.54	0.38	9.9960583	45.8		8 59 42.76
6	310	224 5 46.2	5 4.4	150.60	0.28	9.9959489	45.3		8 55 46.85
7	311	225 6 1.4	5 19.5	150.66	− 0.16	9.9958407	−44.8		8 51 50.94
8	312	226 6 18.0	5 35.9	150.72	− 0.03	9.9957340	44.1		8 47 55.03
9	313	227 6 36.0	5 53.8	150.78	+ 0.11	9.9956289	43.4		8 43 59.12
10	314	228 6 55.6	6 13.2	150.85	+ 0.24	9.9955255	−42.7		8 40 3.21
11	315	229 7 16.7	6 34.1	150.91	0.35	9.9954240	41.9		8 36 7.30
12	316	230 7 39.4	6 56.7	150.98	0.45	9.9953242	41.2		8 32 11.39
13	317	231 8 3.6	7 20.7	151.05	+ 0.53	9.9952264	−40.3		8 28 15.48
14	318	232 8 29.6	7 46.6	151.11	0.57	9.9951308	39.4		8 24 19.57
15	319	233 8 57.3	8 14.1	151.19	0.59	9.9950371	38.6		8 20 23.66
16	320	234 9 26.6	8 43.2	151.26	+ 0.58	9.9949454	−37.8		8 16 27.74
17	321	235 9 57.7	9 14.2	151.33	0.53	9.9948557	37.0		8 12 31.83
18	322	236 10 30.5	9 46.8	151.40	0.46	9.9947679	36.2		8 8 35.92
19	323	237 11 5.1	10 21.2	151.48	+ 0.37	9.9946818	−35.5		8 4 40.01
20	324	238 11 41.4	10 57.3	151.55	0.26	9.9945975	34.8		8 0 44.10
21	325	239 12 19.6	11 35.4	151.62	+ 0.14	9.9945148	34.1		7 56 48.19
22	326	240 12 59.3	12 14.9	151.69	0.00	9.9944336	−33.5		7 52 52.28
23	327	241 13 40.8	12 56.2	151.76	− 0.13	9.9943539	33.0		7 48 56.36
24	328	242 14 23.9	13 39.1	151.83	0.25	9.9942754	32.4		7 45 0.45
25	329	243 15 8.6	14 23.7	151.89	− 0.37	9.9941982	−31.9		7 41 4.54
26	330	244 15 54.6	15 9.5	151.95	0.46	9.9941223	31.4		7 37 8.63
27	331	245 16 42.1	15 56.8	152.00	0.52	9.9940476	30.9		7 33 12.72
28	332	246 17 30.8	16 45.3	152.05	− 0.55	9.9939742	−30.4		7 29 16.80
29	333	247 18 20.7	17 35.0	152.10	0.56	9.9939018	29.9		7 25 20.89
30	334	248 19 11.7	18 25.9	152.15	0.53	9.9938307	29.3		7 21 24.98
31	335	249 20 3.7	19 17.7	152.19	− 0.48	9.9937610	−28.7		7 17 29.07

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January $0^d.0$.

Diff. for 1 Hour, $9^s.8296$. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S								
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	15 3.6	14 59.6	55 9.4	−1.26	54 55.0	−1.12	2 54.2	2.24	3.8
2	14 56.2	14 53.4	54 42.5	0.96	54 31.9	0.79	3 47.4	2.18	4.8
3	14 51.1	14 49.4	54 23.5	0.60	54 17.5	−0.40	4 38.8	2.08	5.8
4	14 48.5	14 48.2	54 14.0	−0.18	54 13.1	+0.04	5 27.5	1.97	6.8
5	14 48.7	14 49.9	54 14.9	+0.26	54 19.3	0.47	6 13.4	1.85	7.8
6	14 51.8	14 54.4	54 26.3	0.69	54 35.8	0.90	6 56.7	1.76	8.8
7	14 57.7	15 1.6	54 47.9	+1.10	55 2.2	+1.28	7 38.4	1.72	9.8
8	15 6.1	15 11.0	55 18.6	1.44	55 36.8	1.58	8 19.5	1.72	10.8
9	15 16.4	15 22.2	55 56.6	1.70	56 17.7	1.79	9 1.0	1.76	11.8
10	15 28.1	15 34.2	56 39.5	+1.84	57 1.8	+1.86	9 44.4	1.86	12.8
11	15 40.3	15 46.2	57 24.2	1.84	57 46.0	1.78	10 30.8	2.01	13.8
12	15 51.9	15 57.3	58 7.0	1.69	58 26.6	1.57	11 21.5	2.22	14.8
13	16 2.2	16 6.5	58 44.6	+1.41	59 0.4	+1.23	12 17.4	2.44	15.8
14	16 10.2	16 13.1	59 14.0	1.02	59 24.9	0.80	13 18.2	2.65	16.8
15	16 15.4	16 16.9	59 33.3	0.58	59 38.9	+0.36	14 22.1	2.68	17.8
16	16 17.8	16 17.9	59 42.0	+0.15	59 42.5	−0.05	15 26.0	2.62	18.8
17	16 17.4	16 16.4	59 40.7	−0.23	59 36.9	0.40	16 27.1	2.46	19.8
18	16 14.8	16 12.9	59 31.2	0.54	59 23.9	0.66	17 23.7	2.26	20.8
19	16 10.5	16 7.9	59 15.3	−0.76	59 5.6	−0.85	18 15.7	2.08	21.8
20	16 5.0	16 1.9	58 55.0	0.91	58 43.7	0.97	19 3.9	1.96	22.8
21	15 58.7	15 55.3	58 31.8	1.01	58 19.5	1.05	19 50.2	1.90	23.8
22	15 51.8	15 48.2	58 6.7	−1.08	57 53.5	−1.12	20 35.5	1.89	24.8
23	15 44.5	15 40.8	57 39.9	1.15	57 26.0	1.17	21 21.4	1.93	25.8
24	15 36.9	15 33.0	57 11.9	1.19	56 57.4	1.22	22 8.7	2.02	26.8
25	15 29.0	15 24.9	56 42.7	−1.23	56 27.9	−1.24	22 58.4	2.12	27.8
26	15 20.9	15 16.8	56 13.0	1.24	55 58.1	1.23	23 50.3	2.20	28.8
27	15 12.8	15 8.9	55 43.4	1.21	55 29.0	1.18	6		0.1
28	15 5.1	15 1.6	55 15.2	−1.12	55 2.1	−1.06	0 43.9	2.25	1.1
29	14 58.2	14 55.2	54 49.8	0.98	54 38.7	0.87	1 37.7	2.22	2.1
30	14 52.6	14 50.3	54 29.0	0.75	54 20.8	0.61	2 30.2	2.14	3.1
31	14 48.6	14 47.3	54 14.3	−0.46	54 9.8	−0.29	3 20.2	2.02	4.1

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 1.					**SATURDAY 3.**			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	17 30 55.67	2.3275	S. 28 25 12.1	1.887	0	19 20 20.63	2.2024	S. 27 8 33.8	4.890
1	17 33 15.30	2.3269	28 27 0.8	1.737	1	19 22 32.65	2.1982	27 3 36.6	5.016
2	17 35 34.89	2.3262	28 28 40.5	1.587	2	19 24 44.41	2.1939	26 58 31.9	5.141
3	17 37 54.44	2.3254	28 30 11.2	1.437	3	19 26 55.92	2.1897	26 53 19.7	5.266
4	17 40 13.94	2.3244	28 31 32.9	1.287	4	19 29 7.17	2.1853	26 48 0.0	5.390
5	17 42 33.37	2.3233	28 32 45.6	1.137	5	19 31 18.16	2.1810	26 42 32.9	5.513
6	17 44 52.74	2.3222	28 33 49.4	0.988	6	19 33 28.89	2.1767	26 36 58.4	5.636
7	17 47 12.04	2.3210	28 34 44.2	0.839	7	19 35 39.36	2.1723	26 31 16.5	5.758
8	17 49 31.26	2.3197	28 35 30.1	0.690	8	19 37 49.56	2.1678	26 25 27.4	5.879
9	17 51 50.41	2.3184	28 36 7.0	0.541	9	19 39 59.50	2.1634	26 19 31.0	6.000
10	17 54 9.47	2.3169	28 36 35.0	0.393	10	19 42 9.17	2.1589	26 13 27.4	6.119
11	17 56 28.44	2.3153	28 36 54.2	0.246	11	19 44 18.57	2.1545	26 7 16.7	6.238
12	17 58 47.31	2.3136	28 37 4.5	− 0.098	12	19 46 27.71	2.1500	26 0 58.9	6.356
13	18 1 6.07	2.3119	28 37 5.9	+ 0.050	13	19 48 36.57	2.1454	25 54 34.0	6.473
14	18 3 24.73	2.3101	28 36 58.5	0.197	14	19 50 45.16	2.1409	25 48 2.2	6.588
15	18 5 43.28	2.3082	28 36 42.3	0.343	15	19 52 53.48	2.1363	25 41 23.4	6.704
16	18 8 1.71	2.3061	28 36 17.3	0.490	16	19 55 1.52	2.1317	25 34 37.7	6.818
17	18 10 20.01	2.3040	28 35 43.5	0.637	17	19 57 9.29	2.1272	25 27 45.2	6.932
18	18 12 38.19	2.3018	28 35 0.9	0.783	18	19 59 16.78	2.1226	25 20 45.8	7.046
19	18 14 56.23	2.2995	28 34 9.6	0.927	19	20 1 24.00	2.1180	25 13 39.7	7.158
20	18 17 14.13	2.2972	28 33 9.7	1.071	20	20 3 30.94	2.1133	25 6 26.9	7.269
21	18 19 31.89	2.2947	28 32 1.1	1.215	21	20 5 37.60	2.1087	24 59 7.4	7.380
22	18 21 49.50	2.2922	28 30 43.9	1.358	22	20 7 43.99	2.1041	24 51 41.3	7.489
23	18 24 6.95	2.2895	S. 28 29 18.1	1.502	23	20 9 50.10	2.0995	S. 24 44 8.7	7.598
	FRIDAY 2.					**SUNDAY 4.**			
0	18 26 24.24	2.2868	S. 28 27 43.6	1.646	0	20 11 55.93	2.0948	S. 24 36 29.5	7.706
1	18 28 41.37	2.2841	28 26 0.6	1.788	1	20 14 1.48	2.0902	24 28 43.9	7.813
2	18 30 58.33	2.2812	28 24 9.1	1.929	2	20 16 6.76	2.0857	24 20 51.9	7.920
3	18 33 15.12	2.2783	28 22 9.1	2.070	3	20 18 11.76	2.0811	24 12 53.5	8.026
4	18 35 31.73	2.2753	28 20 0.7	2.210	4	20 20 16.49	2.0765	24 4 48.8	8.130
5	18 37 48.16	2.2723	28 17 43.9	2.351	5	20 22 20.94	2.0718	23 56 37.9	8.234
6	18 40 4.41	2.2692	28 15 18.6	2.491	6	20 24 25.11	2.0672	23 48 20.7	8.336
7	18 42 20.47	2.2660	28 12 45.0	2.629	7	20 26 29.01	2.0627	23 39 57.3	8.440
8	18 44 36.33	2.2627	28 10 3.1	2.767	8	20 28 32.63	2.0581	23 31 27.9	8.541
9	18 46 51.99	2.2593	28 7 12.9	2.905	9	20 30 35.98	2.0536	23 22 52.4	8.642
10	18 49 7.45	2.2559	28 4 14.5	3.042	10	20 32 39.06	2.0491	23 14 10.9	8.742
11	18 51 22.70	2.2524	28 1 7.9	3.178	11	20 34 41.87	2.0445	23 5 23.4	8.841
12	18 53 37.74	2.2489	27 57 53.1	3.314	12	20 36 44.40	2.0399	22 56 30.0	8.939
13	18 55 52.57	2.2453	27 54 30.2	3.449	13	20 38 46.66	2.0355	22 47 30.7	9.037
14	18 58 7.18	2.2416	27 50 59.2	3.583	14	20 40 48.66	2.0311	22 38 25.6	9.133
15	19 0 21.57	2.2379	27 47 20.2	3.717	15	20 42 50.39	2.0267	22 29 14.7	9.229
16	19 2 35.73	2.2342	27 43 33.2	3.850	16	20 44 51.86	2.0222	22 19 58.1	9.323
17	19 4 49.67	2.2304	27 39 38.2	3.983	17	20 46 53.06	2.0177	22 10 35.9	9.417
18	19 7 3.38	2.2265	27 35 35.2	4.115	18	20 48 53.99	2.0134	22 1 8.0	9.511
19	19 9 16.85	2.2226	27 31 24.4	4.245	19	20 50 54.66	2.0091	21 51 34.6	9.604
20	19 11 30.09	2.2187	27 27 5.8	4.375	20	20 52 55.08	2.0048	21 41 55.6	9.696
21	19 13 43.09	2.2147	27 22 39.4	4.504	21	20 54 55.24	2.0005	21 32 11.1	9.787
22	19 15 55.85	2.2106	27 18 5.3	4.633	22	20 56 55.14	1.9963	21 22 21.1	9.877
23	19 18 8.36	2.2065	27 13 23.4	4.762	23	20 58 54.79	1.9921	21 12 25.8	9.966
24	19 20 20.63	2.2024	S. 27 8 33.8	4.890	24	21 0 54.19	1.9879	S. 21 2 25.2	10.054

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 0 54.19	1.9879	S.21 2 25.2	10.054
1	21 2 53.34	1.9837	20 52 19.3	10.142
2	21 4 52.24	1.9796	20 42 8.1	10.230
3	21 6 50.89	1.9755	20 31 51.7	10.317
4	21 8 49.30	1.9715	20 21 30.1	10.403
5	21 10 47.47	1.9674	20 11 3.5	10.486
6	21 12 45.39	1.9634	20 0 31.8	10.570
7	21 14 43.08	1.9596	19 49 55.1	10.653
8	21 16 40.54	1.9557	19 39 13.4	10.736
9	21 18 37.76	1.9519	19 28 26.8	10.817
10	21 20 34.76	1.9481	19 17 35.4	10.898
11	21 22 31.53	1.9443	19 6 39.1	10.978
12	21 24 28.07	1.9405	18 55 38.0	11.057
13	21 26 24.39	1.9369	18 44 32.2	11.136
14	21 28 20.50	1.9333	18 33 21.7	11.214
15	21 30 16.39	1.9297	18 22 6.5	11.292
16	21 32 12.06	1.9262	18 10 46.7	11.368
17	21 34 7.53	1.9227	17 59 22.4	11.443
18	21 36 2.79	1.9192	17 47 53.6	11.518
19	21 37 57.84	1.9158	17 36 20.3	11.592
20	21 39 52.69	1.9126	17 24 42.6	11.665
21	21 41 47.35	1.9094	17 13 0.5	11.737
22	21 43 41.82	1.9062	17 1 14.1	11.809
23	21 45 36.09	1.9029	S.16 49 23.4	11.881

TUESDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 47 30.17	1.8997	S.16 37 28.4	11.953
1	21 49 24.06	1.8967	16 25 29.2	12.021
2	21 51 17.78	1.8936	16 13 25.9	12.090
3	21 53 11.32	1.8909	16 1 18.4	12.158
4	21 55 4.69	1.8880	15 49 6.9	12.226
5	21 56 57.88	1.8851	15 36 51.3	12.293
6	21 58 50.90	1.8824	15 24 31.7	12.360
7	22 0 43.76	1.8797	15 12 8.1	12.425
8	22 2 36.46	1.8770	14 59 40.7	12.489
9	22 4 29.00	1.8743	14 47 9.4	12.553
10	22 6 21.38	1.8718	14 34 34.3	12.617
11	22 8 13.62	1.8694	14 21 55.4	12.680
12	22 10 5.71	1.8670	14 9 12.7	12.742
13	22 11 57.66	1.8647	13 56 26.3	12.803
14	22 13 49.47	1.8624	13 43 36.3	12.862
15	22 15 41.14	1.8601	13 30 42.8	12.922
16	22 17 32.68	1.8580	13 17 45.7	12.982
17	22 19 24.10	1.8559	13 4 45.0	13.042
18	22 21 15.39	1.8538	12 51 40.7	13.100
19	22 23 6.56	1.8519	12 38 33.0	13.156
20	22 24 57.62	1.8501	12 25 22.0	13.212
21	22 26 48.57	1.8483	12 12 7.6	13.267
22	22 28 39.41	1.8464	11 58 49.9	13.322
23	22 30 30.14	1.8447	11 45 28.9	13.377
24	22 32 20.77	1.8430	S.11 32 4.7	13.430

WEDNESDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 32 20.77	1.8430	S.11 32 4.7	13.430
1	22 34 11.30	1.8415	11 18 37.3	13.483
2	22 36 1.75	1.8401	11 5 6.7	13.536
3	22 37 52.11	1.8387	10 51 33.0	13.587
4	22 39 42.39	1.8373	10 37 56.2	13.638
5	22 41 32.59	1.8360	10 24 16.4	13.687
6	22 43 22.71	1.8348	10 10 33.7	13.736
7	22 45 12.76	1.8337	9 56 48.1	13.785
8	22 47 2.75	1.8326	9 42 59.5	13.834
9	22 48 52.67	1.8315	9 29 8.0	13.882
10	22 50 42.53	1.8306	9 15 13.7	13.928
11	22 52 32.34	1.8297	9 1 16.7	13.974
12	22 54 22.10	1.8289	8 47 16.9	14.019
13	22 56 11.81	1.8283	8 33 14.4	14.063
14	22 58 1.49	1.8277	8 19 9.3	14.107
15	22 59 51.13	1.8271	8 5 1.6	14.150
16	23 1 40.74	1.8266	7 50 51.3	14.192
17	23 3 30.32	1.8261	7 36 38.5	14.233
18	23 5 19.87	1.8257	7 22 23.3	14.274
19	23 7 9.41	1.8255	7 8 5.6	14.315
20	23 8 58.93	1.8253	6 53 45.5	14.354
21	23 10 48.44	1.8251	6 39 23.1	14.392
22	23 12 37.94	1.8251	6 24 58.4	14.430
23	23 14 27.45	1.8252	S. 6 10 31.5	14.468

THURSDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 16 16.96	1.8253	S. 5 56 2.3	14.505
1	23 18 6.48	1.8254	5 41 30.9	14.540
2	23 19 56.01	1.8257	5 26 57.5	14.574
3	23 21 45.56	1.8260	5 12 22.0	14.608
4	23 23 35.13	1.8264	4 57 44.5	14.642
5	23 25 24.73	1.8269	4 43 5.0	14.675
6	23 27 14.36	1.8274	4 28 23.5	14.707
7	23 29 4.02	1.8281	4 13 40.1	14.738
8	23 30 53.73	1.8288	3 58 54.9	14.768
9	23 32 43.48	1.8296	3 44 8.0	14.797
10	23 34 33.28	1.8305	3 29 19.3	14.826
11	23 36 23.14	1.8315	3 14 28.9	14.854
12	23 38 13.06	1.8325	2 59 36.8	14.882
13	23 40 3.04	1.8336	2 44 43.1	14.908
14	23 41 53.09	1.8348	2 29 47.9	14.933
15	23 43 43.22	1.8361	2 14 51.2	14.958
16	23 45 33.42	1.8374	1 59 53.0	14.982
17	23 47 23.71	1.8389	1 44 53.4	15.004
18	23 49 14.09	1.8404	1 29 52.5	15.026
19	23 51 4.56	1.8420	1 14 50.3	15.047
20	23 52 55.13	1.8437	0 59 46.8	15.068
21	23 54 45.80	1.8454	0 44 42.1	15.088
22	23 56 36.58	1.8473	0 29 36.3	15.107
23	23 58 27.48	1.8493	S. 0 14 29.3	15.125
24	0 0 18.49	1.8513	N. 0 0 38.7	15.142

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

FRIDAY 9.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 0 18.49	1.8513	N. 0 0 38.7	15.142
1	0 2 9.63	1.8534	0 15 47.7	15.157
2	0 4 0.90	1.8555	0 30 57.6	15.172
3	0 5 52.29	1.8577	0 46 8.3	15.186
4	0 7 43.82	1.8601	1 1 19.9	15.200
5	0 9 35.50	1.8626	1 16 32.3	15.212
6	0 11 27.33	1.8651	1 31 45.3	15.223
7	0 13 19.31	1.8677	1 46 59.0	15.233
8	0 15 11.45	1.8703	2 2 13.3	15.243
9	0 17 3.75	1.8731	2 17 28.2	15.252
10	0 18 56.22	1.8759	2 32 43.5	15.259
11	0 20 48.86	1.8788	2 47 59.2	15.265
12	0 22 41.68	1.8818	3 3 15.3	15.271
13	0 24 34.68	1.8850	3 18 31.7	15.275
14	0 26 27.88	1.8882	3 33 48.3	15.278
15	0 28 21.27	1.8914	3 49 5.1	15.281
16	0 30 14.85	1.8948	4 4 22.0	15.282
17	0 32 8.64	1.8982	4 19 39.0	15.282
18	0 34 2.64	1.9017	4 34 55.9	15.281
19	0 35 56.85	1.9054	4 50 12.7	15.279
20	0 37 51.28	1.9091	5 5 29.4	15.277
21	0 39 45.94	1.9128	5 20 45.9	15.273
22	0 41 40.82	1.9167	5 36 2.1	15.267
23	0 43 35.94	1.9207	N. 5 51 17.9	15.261

SATURDAY 10.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	0 45 31.30	1.9247	N. 6 6 33.4	15.254
1	0 47 26.90	1.9289	6 21 48.4	15.245
2	0 49 22.76	1.9331	6 37 2.8	15.234
3	0 51 18.87	1.9373	6 52 16.5	15.223
4	0 53 15.24	1.9417	7 7 29.5	15.211
5	0 55 11.87	1.9461	7 22 41.8	15.197
6	0 57 8.77	1.9506	7 37 53.2	15.182
7	0 59 5.94	1.9553	7 53 3.7	15.167
8	1 1 3.40	1.9601	8 8 13.2	15.150
9	1 3 1.15	1.9649	8 23 21.7	15.132
10	1 4 59.19	1.9697	8 38 29.0	15.112
11	1 6 57.52	1.9747	8 53 35.1	15.090
12	1 8 56.15	1.9797	9 8 39.8	15.067
13	1 10 55.08	1.9849	9 23 43.1	15.044
14	1 12 54.33	1.9902	9 38 45.0	15.020
15	1 14 53.90	1.9955	9 53 45.5	14.994
16	1 16 53.79	2.0008	10 8 44.3	14.965
17	1 18 54.00	2.0062	10 23 41.3	14.935
18	1 20 54.54	2.0118	10 38 36.5	14.905
19	1 22 55.42	2.0175	10 53 29.9	14.873
20	1 24 56.64	2.0232	11 8 21.3	14.839
21	1 26 58.21	2.0291	11 23 10.6	14.804
22	1 29 0.13	2.0350	11 37 57.8	14.768
23	1 31 2.41	2.0409	11 52 42.8	14.731
24	1 33 5.04	2.0469	N.12 7 25.5	14.692

SUNDAY 11.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	1 33 5.04	2.0469	N.12 7 25.5	14.692
1	1 35 8.04	2.0531	12 22 5.8	14.651
2	1 37 11.41	2.0593	12 36 43.6	14.608
3	1 39 15.16	2.0656	12 51 18.8	14.564
4	1 41 19.28	2.0719	13 5 51.3	14.519
5	1 43 23.79	2.0783	13 20 21.1	14.472
6	1 45 28.68	2.0848	13 34 48.0	14.424
7	1 47 33.97	2.0914	13 49 12.0	14.374
8	1 49 39.65	2.0980	14 3 32.9	14.322
9	1 51 45.73	2.1047	14 17 50.6	14.268
10	1 53 52.22	2.1116	14 32 5.1	14.214
11	1 55 59.12	2.1185	14 46 16.3	14.158
12	1 58 6.44	2.1254	15 0 24.0	14.099
13	2 0 14.17	2.1324	15 14 28.2	14.039
14	2 2 22.33	2.1395	15 28 28.7	13.977
15	2 4 30.91	2.1466	15 42 25.5	13.914
16	2 6 39.92	2.1538	15 56 18.4	13.849
17	2 8 49.37	2.1611	16 10 7.4	13.782
18	2 10 59.25	2.1684	16 23 52.3	13.714
19	2 13 9.58	2.1758	16 37 33.1	13.644
20	2 15 20.35	2.1832	16 51 9.6	13.572
21	2 17 31.57	2.1907	17 4 41.7	13.498
22	2 19 43.24	2.1983	17 18 9.3	13.422
23	2 21 55.37	2.2060	N.17 31 32.3	13.345

MONDAY 12.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	2 24 7.96	2.2137	N.17 44 50.7	13.266
1	2 26 21.01	2.2214	17 58 4.2	13.184
2	2 28 34.53	2.2292	18 11 12.8	13.102
3	2 30 48.51	2.2369	18 24 16.4	13.018
4	2 33 2.96	2.2447	18 37 14.9	12.931
5	2 35 17.88	2.2526	18 50 8.1	12.843
6	2 37 33.28	2.2606	19 2 55.9	12.752
7	2 39 49.15	2.2686	19 15 38.3	12.659
8	2 42 5.51	2.2767	19 28 15.0	12.564
9	2 44 22.35	2.2847	19 40 46.0	12.468
10	2 46 39.68	2.2928	19 53 11.2	12.371
11	2 48 57.49	2.3008	20 5 30.5	12.271
12	2 51 15.78	2.3089	20 17 43.7	12.168
13	2 53 34.56	2.3171	20 29 50.7	12.064
14	2 55 53.84	2.3254	20 41 51.4	11.959
15	2 58 13.61	2.3336	20 53 45.8	11.852
16	3 0 33.87	2.3418	21 5 33.7	11.742
17	3 2 54.62	2.3500	21 17 14.9	11.630
18	3 5 15.87	2.3582	21 28 49.3	11.516
19	3 7 37.61	2.3664	21 40 16.8	11.401
20	3 9 59.84	2.3747	21 51 37.4	11.284
21	3 12 22.57	2.3829	22 2 50.9	11.164
22	3 14 45.79	2.3912	22 13 57.1	11.043
23	3 17 9.51	2.3994	22 24 56.0	10.920
24	3 19 33.72	2.4076	N.22 35 47.5	10.796

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	3 19 33.72	2.4076	N.22 35 47.5	10.795
1	3 21 58.42	2.4158	22 46 31.4	10.667
2	3 24 23.61	2.4240	22 57 7.5	10.537
3	3 26 49.30	2.4322	23 7 35.8	10.406
4	3 29 15.48	2.4403	23 17 56.2	10.272
5	3 31 42.14	2.4484	23 28 8.5	10.137
6	3 34 9.29	2.4565	23 38 12.7	10.001
7	3 36 36.92	2.4645	23 48 8.6	9.862
8	3 39 5.03	2.4726	23 57 56.1	9.720
9	3 41 33.63	2.4806	24 7 35.0	9.577
10	3 44 2.70	2.4884	24 17 5.3	9.432
11	3 46 32.24	2.4963	24 26 26.9	9.286
12	3 49 2.26	2.5042	24 35 39.7	9.138
13	3 51 32.74	2.5119	24 44 43.5	8.987
14	3 54 3.68	2.5196	24 53 38.2	8.835
15	3 56 35.09	2.5272	25 2 23.7	8.681
16	3 59 6.95	2.5347	25 10 59.9	8.524
17	4 1 39.26	2.5422	25 19 26.6	8.366
18	4 4 12.01	2.5495	25 27 43.8	8.207
19	4 6 45.20	2.5568	25 35 51.4	8.045
20	4 9 18.83	2.5641	25 43 49.2	7.882
21	4 11 52.89	2.5712	25 51 37.2	7.717
22	4 14 27.37	2.5782	25 59 15.3	7.551
23	4 17 2.27	2.5852	N.26 6 43.3	7.382

WEDNESDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	4 19 37.59	2.5920	N.26 14 1.1	7.212
1	4 22 13.31	2.5987	26 21 8.7	7.040
2	4 24 49.43	2.6052	26 28 5.9	6.867
3	4 27 25.94	2.6117	26 34 52.7	6.693
4	4 30 2.83	2.6180	26 41 29.0	6.517
5	4 32 40.10	2.6242	26 47 54.7	6.338
6	4 35 17.74	2.6303	26 54 9.6	6.158
7	4 37 55.74	2.6363	27 0 13.7	5.978
8	4 40 34.09	2.6421	27 6 6.9	5.796
9	4 43 12.79	2.6477	27 11 49.2	5.612
10	4 45 51.82	2.6532	27 17 20.4	5.427
11	4 48 31.18	2.6586	27 22 40.4	5.240
12	4 51 10.85	2.6638	27 27 49.2	5.053
13	4 53 50.83	2.6688	27 32 46.8	4.864
14	4 56 31.11	2.6737	27 37 32.9	4.673
15	4 59 11.68	2.6785	27 42 7.5	4.481
16	5 1 52.53	2.6831	27 46 30.6	4.289
17	5 4 33.65	2.6875	27 50 42.2	4.096
18	5 7 15.03	2.6917	27 54 42.1	3.901
19	5 9 56.66	2.6957	27 58 30.3	3.705
20	5 12 38.52	2.6996	28 2 6.7	3.508
21	5 15 20.61	2.7033	28 5 31.3	3.311
22	5 18 2.91	2.7068	28 8 44.0	3.112
23	5 20 45.42	2.7101	28 11 44.8	2.913
24	5 23 28.12	2.7132	N.28 14 33.6	2.713

THURSDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	5 23 28.12	2.7132	N.28 14 33.6	2.713
1	5 26 11.00	2.7161	28 17 10.3	2.512
2	5 28 54.05	2.7188	28 19 35.0	2.311
3	5 31 37.26	2.7213	28 21 47.6	2.108
4	5 34 20.61	2.7236	28 23 48.0	1.905
5	5 37 4.09	2.7257	28 25 36.2	1.702
6	5 39 47.70	2.7276	28 27 12.3	1.499
7	5 42 31.41	2.7293	28 28 36.1	1.294
8	5 45 15.22	2.7309	28 29 47.6	1.090
9	5 47 59.12	2.7322	28 30 46.9	0.886
10	5 50 43.09	2.7333	28 31 33.9	0.680
11	5 53 27.12	2.7343	28 32 8.5	0.474
12	5 56 11.20	2.7350	28 32 30.7	0.268
13	5 58 55.31	2.7354	28 32 40.6	+ 0.063
14	6 1 39.45	2.7357	28 32 38.2	− 0.143
15	6 4 23.60	2.7357	28 32 23.4	0.350
16	6 7 7.74	2.7356	28 31 56.2	0.556
17	6 9 51.87	2.7352	28 31 16.7	0.761
18	6 12 35.97	2.7347	28 30 24.9	0.967
19	6 15 20.03	2.7339	28 29 20.7	1.172
20	6 18 4.04	2.7330	28 28 4.2	1.377
21	6 20 47.99	2.7318	28 26 35.4	1.582
22	6 23 31.86	2.7305	28 24 54.3	1.787
23	6 26 15.65	2.7290	N.28 23 0.9	1.992

FRIDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	6 28 59.34	2.7272	N.28 20 55.2	2.196
1	6 31 42.91	2.7252	28 18 37.3	2.399
2	6 34 26.36	2.7231	28 16 7.3	2.602
3	6 37 9.68	2.7208	28 13 25.1	2.804
4	6 39 52.85	2.7182	28 10 30.8	3.006
5	6 42 35.86	2.7154	28 7 24.3	3.208
6	6 45 18.70	2.7125	28 4 5.8	3.408
7	6 48 1.36	2.7094	28 0 35.3	3.608
8	6 50 43.83	2.7062	27 56 52.8	3.807
9	6 53 26.10	2.7027	27 52 58.5	4.004
10	6 56 8.15	2.6990	27 48 52.3	4.201
11	6 58 49.98	2.6952	27 44 34.3	4.398
12	7 1 31.58	2.6912	27 40 4.6	4.593
13	7 4 12.93	2.6871	27 35 23.2	4.788
14	7 6 54.03	2.6828	27 30 30.1	4.981
15	7 9 34.87	2.6784	27 25 25.5	5.172
16	7 12 15.44	2.6738	27 20 9.4	5.363
17	7 14 55.73	2.6690	27 14 41.9	5.552
18	7 17 35.72	2.6640	27 9 3.1	5.741
19	7 20 15.41	2.6590	27 3 13.0	5.928
20	7 22 54.80	2.6538	26 57 11.7	6.115
21	7 25 33.87	2.6484	26 50 59.2	6.301
22	7 28 12.61	2.6430	26 44 35.6	6.484
23	7 30 51.03	2.6375	26 38 1.1	6.665
24	7 33 29.11	2.6318	N.26 31 15.8	6.845

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	7 33 29.11	2.6318	N.26 31 15.8	6.845
1	7 36 6.84	2.6259	26 24 19.7	7.025
2	7 38 44.22	2.6200	26 17 12.8	7.203
3	7 41 21.24	2.6139	26 9 55.3	7.379
4	7 43 57.89	2.6077	26 2 27.3	7.553
5	7 46 34.17	2.6015	25 54 48.9	7.727
6	7 49 10.07	2.5952	25 47 0.1	7.898
7	7 51 45.59	2.5887	25 39 1.1	8.068
8	7 54 20.72	2.5822	25 30 51.9	8.237
9	7 56 55.45	2.5755	25 22 32.6	8.405
10	7 59 29.78	2.5688	25 14 3.3	8.570
11	8 2 3.71	2.5621	25 5 24.2	8.733
12	8 4 37.23	2.5552	24 56 35.3	8.895
13	8 7 10.34	2.5483	24 47 36.8	9.055
14	8 9 43.03	2.5413	24 38 28.7	9.214
15	8 12 15.30	2.5343	24 29 11.1	9.371
16	8 14 47.14	2.5272	24 19 44.2	9.526
17	8 17 18.56	2.5201	24 10 8.0	9.679
18	8 19 49.55	2.5128	24 0 22.7	9.830
19	8 22 20.10	2.5056	23 50 28.4	9.980
20	8 24 50.22	2.4983	23 40 25.1	10.128
21	8 27 19.90	2.4910	23 30 13.0	10.274
22	8 29 49.14	2.4837	23 19 52.2	10.418
23	8 32 17.94	2.4763	N.23 9 22.8	10.561

SUNDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	8 34 46.30	2.4689	N.22 58 44.9	10.702
1	8 37 14.21	2.4615	22 47 58.6	10.840
2	8 39 41.68	2.4541	22 37 4.1	10.977
3	8 42 8.70	2.4467	22 26 1.4	11.112
4	8 44 35.28	2.4392	22 14 50.6	11.246
5	8 47 1.41	2.4317	22 3 31.9	11.377
6	8 49 27.09	2.4243	21 52 5.4	11.506
7	8 51 52.33	2.4169	21 40 31.2	11.634
8	8 54 17.12	2.4094	21 28 49.3	11.761
9	8 56 41.46	2.4020	21 16 59.9	11.885
10	8 59 5.36	2.3946	21 5 3.1	12.007
11	9 1 28.81	2.3872	20 52 59.1	12.127
12	9 3 51.82	2.3798	20 40 47.9	12.246
13	9 6 14.38	2.3724	20 28 29.6	12.363
14	9 8 36.51	2.3651	20 16 4.4	12.477
15	9 10 58.20	2.3578	20 3 32.4	12.589
16	9 13 19.45	2.3505	19 50 53.7	12.700
17	9 15 40.26	2.3432	19 38 8.4	12.810
18	9 18 0.64	2.3360	19 25 16.5	12.918
19	9 20 20.58	2.3288	19 12 18.3	13.023
20	9 22 40.10	2.3217	18 59 13.8	13.127
21	9 24 59.19	2.3146	18 46 3.1	13.228
22	9 27 17.85	2.3075	18 32 46.3	13.329
23	9 29 36.09	2.3005	18 19 23.6	13.427
24	9 31 53.91	2.2936	N.18 5 55.1	13.523

MONDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	9 31 53.91	2.2936	N.18 5 55.1	13.523
1	9 34 11.32	2.2867	17 52 20.8	13.618
2	9 36 28.31	2.2798	17 38 40.9	13.711
3	9 38 44.89	2.2730	17 24 55.5	13.802
4	9 41 1.07	2.2663	17 11 4.7	13.892
5	9 43 16.85	2.2596	16 57 8.5	13.980
6	9 45 32.22	2.2529	16 43 7.1	14.066
7	9 47 47.20	2.2464	16 29 0.6	14.150
8	9 50 1.79	2.2399	16 14 49.1	14.232
9	9 52 15.99	2.2335	16 0 32.8	14.312
10	9 54 29.81	2.2272	15 46 11.7	14.391
11	9 56 43.25	2.2208	15 31 45.9	14.468
12	9 58 56.31	2.2146	15 17 15.5	14.544
13	10 1 9.00	2.2085	15 2 40.6	14.617
14	10 3 21.33	2.2024	14 48 1.4	14.689
15	10 5 33.29	2.1963	14 33 17.9	14.760
16	10 7 44.89	2.1904	14 18 30.2	14.829
17	10 9 56.14	2.1846	14 3 38.4	14.897
18	10 12 7.04	2.1788	13 48 42.6	14.963
19	10 14 17.60	2.1731	13 33 42.9	15.026
20	10 16 27.82	2.1675	13 18 39.5	15.087
21	10 18 37.70	2.1619	13 3 32.4	15.148
22	10 20 47.25	2.1565	12 48 21.7	15.207
23	10 22 56.48	2.1512	N.12 33 7.5	15.265

TUESDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	10 25 5.39	2.1459	N.12 17 49.9	15.321
1	10 27 13.98	2.1407	12 2 29.0	15.375
2	10 29 22.27	2.1356	11 47 4.9	15.427
3	10 31 30.25	2.1305	11 31 37.7	15.478
4	10 33 37.93	2.1256	11 16 7.5	15.527
5	10 35 45.32	2.1207	11 0 34.4	15.576
6	10 37 52.41	2.1158	10 44 58.4	15.622
7	10 39 59.22	2.1112	10 29 19.7	15.667
8	10 42 5.76	2.1067	10 13 38.4	15.710
9	10 44 12.02	2.1022	9 57 54.5	15.752
10	10 46 18.02	2.0977	9 42 8.1	15.793
11	10 48 23.75	2.0933	9 26 19.3	15.832
12	10 50 29.22	2.0891	9 10 28.3	15.869
13	10 52 34.44	2.0850	8 54 35.1	15.905
14	10 54 39.42	2.0809	8 38 39.7	15.940
15	10 56 44.15	2.0769	8 22 42.3	15.973
16	10 58 48.65	2.0731	8 6 43.0	16.004
17	11 0 52.92	2.0693	7 50 41.8	16.034
18	11 2 56.97	2.0657	7 34 38.9	16.062
19	11 5 0.80	2.0621	7 18 34.3	16.090
20	11 7 4.42	2.0585	7 2 28.1	16.116
21	11 9 7.82	2.0550	6 46 20.4	16.141
22	11 11 11.02	2.0517	6 30 11.2	16.164
23	11 13 14.03	2.0485	6 14 0.7	16.185
24	11 15 16.84	2.0453	N. 5 57 49.0	16.206

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 21.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 15 16.84	2.0453	N. 5 57 49.0	16.206
1	11 17 19.46	2.0423	5 41 36.1	16.224
2	11 19 21.91	2.0394	5 25 22.1	16.242
3	11 21 24.19	2.0366	5 9 7.1	16.258
4	11 23 26.30	2.0338	4 52 51.1	16.273
5	11 25 28.24	2.0310	4 36 34.3	16.286
6	11 27 30.02	2.0284	4 20 16.8	16.298
7	11 29 31.65	2.0260	4 3 58.6	16.309
8	11 31 33.14	2.0236	3 47 39.7	16.319
9	11 33 34.48	2.0213	3 31 20.3	16.327
10	11 35 35.69	2.0191	3 15 0.5	16.333
11	11 37 36.77	2.0169	2 58 40.3	16.339
12	11 39 37.72	2.0148	2 42 19.8	16.343
13	11 41 38.55	2.0129	2 25 59.1	16.346
14	11 43 39.27	2.0111	2 9 38.3	16.348
15	11 45 39.88	2.0093	1 53 17.4	16.349
16	11 47 40.39	2.0077	1 36 56.5	16.348
17	11 49 40.80	2.0061	1 20 35.7	16.345
18	11 51 41.11	2.0045	1 4 15.1	16.342
19	11 53 41.34	2.0032	0 47 54.7	16.337
20	11 55 41.49	2.0019	0 31 34.7	16.330
21	11 57 41.57	2.0007	N. 0 15 15.1	16.322
22	11 59 41.58	1.9996	S. 0 1 4.0	16.314
23	12 1 41.52	1.9984	S. 0 17 22.6	16.305

THURSDAY 22.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 3 41.39	1.9974	S. 0 33 40.6	16.294
1	12 5 41.21	1.9966	0 49 57.9	16.282
2	12 7 40.99	1.9959	1 6 14.4	16.268
3	12 9 40.72	1.9952	1 22 30.0	16.253
4	12 11 40.41	1.9946	1 38 44.7	16.237
5	12 13 40.07	1.9941	1 54 58.4	16.219
6	12 15 39.70	1.9937	2 11 11.0	16.200
7	12 17 39.31	1.9933	2 27 22.4	16.181
8	12 19 38.90	1.9931	2 43 32.7	16.161
9	12 21 38.48	1.9929	2 59 41.7	16.138
10	12 23 38.05	1.9928	3 15 49.3	16.114
11	12 25 37.61	1.9928	3 31 55.4	16.089
12	12 27 37.18	1.9929	3 48 0.0	16.063
13	12 29 36.76	1.9931	4 4 3.0	16.037
14	12 31 36.35	1.9933	4 20 4.4	16.008
15	12 33 35.95	1.9936	4 36 4.0	15.978
16	12 35 35.58	1.9941	4 52 1.8	15.948
17	12 37 35.24	1.9945	5 7 57.8	15.917
18	12 39 34.92	1.9950	5 23 51.8	15.883
19	12 41 34.64	1.9957	5 39 43.8	15.849
20	12 43 34.41	1.9965	5 55 33.7	15.813
21	12 45 34.22	1.9973	6 11 21.4	15.777
22	12 47 34.08	1.9982	6 27 6.9	15.739
23	12 49 34.00	1.9991	6 42 50.1	15.700
24	12 51 33.97	2.0001	S. 6 58 30.9	15.660

FRIDAY 23.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	12 51 33.97	2.0001	S. 6 58 30.9	15.660
1	12 53 34.01	2.0012	7 14 9.3	15.618
2	12 55 34.12	2.0025	7 29 45.1	15.575
3	12 57 34.31	2.0038	7 45 18.3	15.532
4	12 59 34.58	2.0051	8 0 48.9	15.487
5	13 1 34.92	2.0064	8 16 16.7	15.440
6	13 3 35.35	2.0079	8 31 41.7	15.392
7	13 5 35.87	2.0095	8 47 3.8	15.344
8	13 7 36.49	2.0112	9 2 23.0	15.294
9	13 9 37.22	2.0130	9 17 39.1	15.243
10	13 11 38.05	2.0147	9 32 52.1	15.191
11	13 13 38.99	2.0165	9 48 2.0	15.138
12	13 15 40.03	2.0184	10 3 8.7	15.084
13	13 17 41.19	2.0204	10 18 12.1	15.028
14	13 19 42.48	2.0225	10 33 12.0	14.970
15	13 21 43.89	2.0245	10 48 8.5	14.912
16	13 23 45.42	2.0267	11 3 1.5	14.853
17	13 25 47.09	2.0290	11 17 50.9	14.793
18	13 27 48.90	2.0313	11 32 36.7	14.732
19	13 29 50.85	2.0337	11 47 18.7	14.669
20	13 31 52.94	2.0361	12 1 56.9	14.605
21	13 33 55.18	2.0386	12 16 31.3	14.540
22	13 35 57.57	2.0411	12 31 1.7	14.473
23	13 38 0.11	2.0437	S. 12 45 28.1	14.405

SATURDAY 24.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	13 40 2.81	2.0463	S. 12 59 50.3	14.336
1	13 42 5.67	2.0491	13 14 8.4	14.267
2	13 44 8.70	2.0519	13 28 22.3	14.196
3	13 46 11.89	2.0547	13 42 31.9	14.124
4	13 48 15.26	2.0576	13 56 37.2	14.051
5	13 50 18.80	2.0604	14 10 38.0	13.976
6	13 52 22.51	2.0633	14 24 34.3	13.900
7	13 54 26.40	2.0664	14 38 26.0	13.823
8	13 56 30.48	2.0695	14 52 13.1	13.746
9	13 58 34.74	2.0726	15 5 55.5	13.667
10	14 0 39.19	2.0758	15 19 33.1	13.587
11	14 2 43.83	2.0790	15 33 5.9	13.505
12	14 4 48.67	2.0822	15 46 33.7	13.422
13	14 6 53.70	2.0855	15 59 56.5	13.338
14	14 8 58.93	2.0888	16 13 14.2	13.253
15	14 11 4.36	2.0922	16 26 26.9	13.168
16	14 13 9.99	2.0956	16 39 34.4	13.081
17	14 15 15.83	2.0991	16 52 36.6	12.992
18	14 17 21.88	2.1026	17 5 33.4	12.902
19	14 19 28.14	2.1061	17 18 24.8	12.812
20	14 21 34.61	2.1096	17 31 10.8	12.720
21	14 23 41.29	2.1132	17 43 51.2	12.627
22	14 25 48.19	2.1167	17 56 26.0	12.533
23	14 27 55.30	2.1203	18 8 55.1	12.338
24	14 30 2.63	2.1240	S. 18 21 18.5	12.342

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SUNDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	14 30 2.63	2.1240	S. 18 21 18.5	12.342
1	14 32 10.18	2.1277	18 33 36.1	12.244
2	14 34 17.95	2.1314	18 45 47.8	12.145
3	14 36 25.95	2.1351	18 57 53.5	12.046
4	14 38 34.17	2.1388	19 9 53.3	11.946
5	14 40 42.61	2.1425	19 21 47.0	11.843
6	14 42 51.27	2.1463	19 33 34.5	11.740
7	14 45 0.16	2.1501	19 45 15.8	11.637
8	14 47 9.28	2.1539	19 56 50.9	11.532
9	14 49 18.63	2.1577	20 8 19.6	11.425
10	14 51 28.21	2.1615	20 19 41.9	11.318
11	14 53 38.01	2.1653	20 30 57.8	11.210
12	14 55 48.04	2.1691	20 42 7.1	11.100
13	14 57 58.30	2.1729	20 53 9.8	10.990
14	15 0 8.79	2.1767	21 4 5.9	10.879
15	15 2 19.51	2.1806	21 14 55.3	10.767
16	15 4 30.46	2.1844	21 25 37.9	10.653
17	15 6 41.64	2.1882	21 36 13.7	10.538
18	15 8 53.04	2.1919	21 46 42.5	10.422
19	15 11 4.67	2.1957	21 57 4.3	10.306
20	15 13 16.53	2.1996	22 7 19.2	10.189
21	15 15 28.62	2.2033	22 17 27.0	10.070
22	15 17 40.93	2.2070	22 27 27.6	9.951
23	15 19 53.46	2.2107	S. 22 37 21.1	9.831

MONDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	15 22 6.22	2.2145	S. 22 47 7.3	9.709
1	15 24 19.20	2.2182	22 56 46.2	9.587
2	15 26 32.40	2.2218	23 6 17.7	9.463
3	15 28 45.82	2.2254	23 15 41.8	9.339
4	15 30 59.45	2.2290	23 24 58.4	9.213
5	15 33 13.30	2.2327	23 34 7.4	9.087
6	15 35 27.37	2.2362	23 43 8.9	8.961
7	15 37 41.65	2.2397	23 52 2.7	8.833
8	15 39 56.13	2.2431	24 0 48.8	8.704
9	15 42 10.82	2.2466	24 9 27.2	8.575
10	15 44 25.72	2.2500	24 17 57.8	8.444
11	15 46 40.82	2.2534	24 26 20.5	8.313
12	15 48 56.12	2.2567	24 34 35.4	8.182
13	15 51 11.62	2.2599	24 42 42.3	8.049
14	15 53 27.31	2.2631	24 50 41.2	7.915
15	15 55 43.19	2.2662	24 58 32.1	7.781
16	15 57 59.26	2.2694	25 6 14.9	7.645
17	16 0 15.52	2.2725	25 13 49.5	7.509
18	16 2 31.96	2.2755	25 21 16.0	7.373
19	16 4 48.58	2.2784	25 28 34.3	7.236
20	16 7 5.37	2.2813	25 35 44.3	7.098
21	16 9 22.34	2.2842	25 42 46.0	6.959
22	16 11 39.48	2.2870	25 49 39.4	6.820
23	16 13 56.78	2.2896	25 56 24.4	6.680
24	16 16 14.23	2.2922	S. 26 3 1.0	6.539

TUESDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 16 14.23	2.2922	S. 26 3 1.0	6.539
1	16 18 31.84	2.2948	26 9 29.1	6.398
2	16 20 49.60	2.2973	26 15 48.7	6.257
3	16 23 7.52	2.2998	26 21 59.9	6.115
4	16 25 25.58	2.3021	26 28 2.5	5.972
5	16 27 43.77	2.3043	26 33 56.5	5.828
6	16 30 2.09	2.3064	26 39 41.8	5.683
7	16 32 20.54	2.3086	26 45 18.5	5.539
8	16 34 39.12	2.3107	26 50 46.5	5.394
9	16 36 57.82	2.3126	26 56 5.8	5.249
10	16 39 16.63	2.3144	27 1 16.4	5.103
11	16 41 35.55	2.3162	27 6 18.2	4.957
12	16 43 54.57	2.3178	27 11 11.2	4.810
13	16 46 13.69	2.3194	27 15 55.4	4.663
14	16 48 32.90	2.3210	27 20 30.8	4.516
15	16 50 52.21	2.3225	27 24 57.3	4.368
16	16 53 11.60	2.3237	27 29 14.9	4.219
17	16 55 31.06	2.3249	27 33 23.6	4.071
18	16 57 50.59	2.3261	27 37 23.5	3.923
19	17 0 10.19	2.3272	27 41 14.4	3.774
20	17 2 29.85	2.3281	27 44 56.4	3.625
21	17 4 49.56	2.3289	27 48 29.4	3.475
22	17 7 9.32	2.3297	27 51 53.4	3.326
23	17 9 29.13	2.3304	S. 27 55 8.5	3.177

WEDNESDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 11 48.97	2.3309	S. 27 58 14.6	3.027
1	17 14 8.84	2.3313	28 1 11.7	2.877
2	17 16 28.73	2.3317	28 3 59.8	2.726
3	17 18 48.65	2.3321	28 6 38.8	2.575
4	17 21 8.58	2.3322	28 9 8.8	2.426
5	17 23 28.51	2.3322	28 11 29.9	2.276
6	17 25 48.44	2.3322	28 13 42.0	2.126
7	17 28 8.37	2.3320	28 15 45.0	1.975
8	17 30 28.28	2.3317	28 17 39.0	1.825
9	17 32 48.17	2.3313	28 19 24.0	1.675
10	17 35 8.03	2.3308	28 21 0.0	1.525
11	17 37 27.87	2.3303	28 22 27.0	1.374
12	17 39 47.67	2.3297	28 23 44.9	1.223
13	17 42 7.43	2.3288	28 24 53.8	1.074
14	17 44 27.13	2.3279	28 25 53.8	0.926
15	17 46 46.78	2.3270	28 26 44.9	0.777
16	17 49 6.37	2.3259	28 27 27.0	0.627
17	17 51 25.89	2.3247	28 28 0.1	0.477
18	17 53 45.34	2.3234	28 28 24.3	0.328
19	17 56 4.70	2.3220	28 28 39.4	0.180
20	17 58 23.98	2.3206	28 28 45.8	− 0.032
21	18 0 43.17	2.3190	28 28 43.3	+ 0.116
22	18 3 2.26	2.3173	28 28 31.9	0.264
23	18 5 21.25	2.3155	28 28 11.6	0.412
24	18 7 40.12	2.3135	S. 28 27 42.5	0.558

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	THURSDAY 29.			
	h m s	s	° ′ ″	″
0	18 7 40.12	2.3135	S.28 27 42.5	0.558
1	18 9 58.87	2.3116	28 27 4.6	0.705
2	18 12 17.51	2.3096	28 26 17.9	0.852
3	18 14 36.02	2.3074	28 25 22.4	0.998
4	18 16 54.39	2.3051	28 24 18.2	1.143
5	18 19 12.63	2.3027	28 23 5.3	1.288
6	18 21 30.72	2.3002	28 21 43.7	1.432
7	18 23 48.66	2.2977	28 20 13.5	1.576
8	18 26 6.45	2.2951	28 18 34.6	1.720
9	18 28 24.07	2.2924	28 16 47.1	1.863
10	18 30 41.53	2.2896	28 14 51.1	2.005
11	18 32 58.82	2.2867	28 12 46.5	2.147
12	18 35 15.93	2.2837	28 10 33.4	2.288
13	18 37 32.86	2.2806	28 8 11.9	2.429
14	18 39 49.60	2.2774	28 5 41.9	2.570
15	18 42 6.15	2.2741	28 3 3.5	2.709
16	18 44 22.50	2.2708	28 0 16.8	2.847
17	18 46 38.65	2.2675	27 57 21.8	2.986
18	18 48 54.60	2.2641	27 54 18.5	3.124
19	18 51 10.34	2.2605	27 51 6.9	3.261
20	18 53 25.86	2.2569	27 47 47.2	3.397
21	18 55 41.17	2.2533	27 44 19.3	3.532
22	18 57 56.26	2.2496	27 40 43.3	3.667
23	19 0 11.12	2.2457	S.27 36 59.2	3.802
	FRIDAY 30.			
0	19 2 25.74	2.2417	S.27 33 7.1	3.936
1	19 4 40.13	2.2378	27 29 7.0	4.067
2	19 6 54.28	2.2339	27 24 59.0	4.200
3	19 9 8.20	2.2299	27 20 43.0	4.332
4	19 11 21.87	2.2258	27 16 19.2	4.462
5	19 13 35.29	2.2216	27 11 47.6	4.591
6	19 15 48.46	2.2174	27 7 8.3	4.720
7	19 18 1.38	2.2131	27 2 21.2	4.848
8	19 20 14.03	2.2087	26 57 26.5	4.976
9	19 22 26.42	2.2043	26 52 24.1	5.102
10	19 24 38.55	2.1999	26 47 14.2	5.227
11	19 26 50.41	2.1954	26 41 56.8	5.352
12	19 29 2.00	2.1909	26 36 31.9	5.477
13	19 31 13.32	2.1864	26 30 59.6	5.600
14	19 33 24.37	2.1818	26 25 19.9	5.722
15	19 35 35.14	2.1772	26 19 32.9	5.843
16	19 37 45.64	2.1726	26 13 38.7	5.964
17	19 39 55.85	2.1679	26 7 37.2	6.084
18	19 42 5.78	2.1632	26 1 28.6	6.203
19	19 44 15.43	2.1584	25 55 12.9	6.321
20	19 46 24.79	2.1537	25 48 50.1	6.438
21	19 48 33.87	2.1489	25 42 20.3	6.554
22	19 50 42.66	2.1441	25 35 43.6	6.669
23	19 52 51.16	2.1392	25 29 0.0	6.784
24	19 54 59.36	2.1343	S.25 22 9.5	6.898

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SATURDAY, DECEMBER 1.			
	h m s	s	° ′ ″	″
0	19 54 59.36	2.1343	S.25 22 9.5	6.898

PHASES OF THE MOON.

		d	h	m
☽ First Quarter	. Nov.	5	3	15.9
○ Full Moon	. . . .	12	19	49.2
☾ Last Quarter	. . . .	19	14	8.2
● New Moon	. . . .	26	20	54.3

		d	h
☾ Apogee	. . . . Nov.	4	10.0
☾ Perigee	. . . . . .	16	8.6

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	44° 44′ 35″	3288	46° 9′ 1″	3300	47° 33′ 13″	3310	48° 57′ 13″	3321
	Antares	W.	15 15 10	2907	16 47 20	2918	18 19 16	2928	19 50 59	2939
	Fomalhaut	E.	68 23 32	3183	66 57 2	3199	65 30 52	3217	64 5 3	3236
	α Pegasi	E.	90 14 4	3179	88 47 30	3190	87 21 9	3202	85 55 2	3213
2	Sun	W.	55 54 10	3371	57 17 0	3380	58 39 39	3389	60 2 8	3397
	Antares	W.	27 26 26	2985	28 56 57	2994	30 27 17	3002	31 57 27	3010
	Fomalhaut	E.	57 1 26	3332	55 37 51	3353	54 14 41	3375	52 51 56	3397
	α Pegasi	E.	78 47 48	3270	77 23 2	3282	75 58 30	3294	74 34 12	3306
	Mars	E.	107 44 4	2909	106 11 57	2917	104 40 0	2926	103 8 14	2933
3	Sun	W.	66 52 24	3431	68 14 5	3438	69 35 39	3443	70 57 7	3447
	Antares	W.	39 26 5	3042	40 55 26	3047	42 24 40	3052	43 53 48	3056
	Fomalhaut	E.	46 5 3	3531	44 45 13	3562	43 25 57	3596	42 7 18	3633
	α Pegasi	E.	67 36 11	3368	66 13 18	3380	64 50 39	3393	63 28 14	3407
	Mars	E.	95 31 40	2967	94 0 46	2972	92 29 58	2977	90 59 17	2983
4	Sun	W.	77 43 20	3463	79 4 25	3465	80 25 28	3466	81 46 30	3466
	Antares	W.	51 18 22	3071	52 47 7	3073	54 15 50	3073	55 44 32	3073
	α Pegasi	E.	56 40 6	3479	55 19 18	3496	53 58 49	3513	52 38 39	3531
	Mars	E.	83 27 8	2999	81 56 54	3001	80 26 42	3002	78 56 32	3003
	α Arietis	E.	97 5 46	3103	95 37 40	3104	94 9 35	3105	92 41 32	3105
5	Sun	W.	88 31 43	3462	89 52 50	3459	91 14 0	3456	92 35 13	3452
	Antares	W.	63 8 6	3069	64 36 53	3066	66 5 44	3064	67 34 38	3060
	Mars	E.	71 25 49	3001	69 55 38	2999	68 25 24	2997	66 55 7	2994
	α Arietis	E.	85 21 12	3101	83 53 3	3099	82 24 52	3096	80 56 37	3093
6	Sun	W.	99 22 34	3426	100 44 21	3419	102 6 16	3412	103 28 19	3404
	Antares	W.	75 0 26	3035	76 29 55	3029	77 59 32	3022	79 29 17	3015
	Mars	E.	59 22 39	2973	57 51 52	2968	56 20 59	2962	54 49 59	2955
	α Arietis	E.	73 34 14	3070	72 5 28	3064	70 36 34	3058	69 7 33	3052
	Aldebaran	E.	104 26 50	3110	102 58 53	3102	101 30 46	3095	100 2 30	3087
7	Sun	W.	110 20 57	3358	111 44 1	3348	113 7 17	3337	114 30 46	3326
	Antares	W.	87 0 30	2972	88 31 18	2962	90 2 19	2951	91 33 33	2941
	α Aquilæ	W.	46 4 19	4882	47 2 48	4780	48 2 41	4682	49 3 56	4592
	Mars	E.	47 12 44	2917	45 40 47	2909	44 8 39	2900	42 36 20	2890
	α Arietis	E.	61 40 17	3014	60 10 21	3005	58 40 14	2996	57 9 56	2986
	Aldebaran	E.	92 38 35	3042	91 9 14	3031	89 39 40	3022	88 9 54	3011
8	Sun	W.	121 31 32	3265	122 56 25	3251	124 21 34	3237	125 46 59	3223
	Antares	W.	99 13 13	2883	100 45 54	2869	102 18 52	2857	103 52 6	2843
	α Aquilæ	W.	54 28 23	4217	55 36 33	4156	56 45 41	4097	57 55 46	4042
	Mars	E.	34 51 35	2840	33 17 59	2829	31 44 9	2818	30 10 5	2806
	α Arietis	E.	49 35 29	2939	48 3 59	2928	46 32 16	2919	45 0 21	2909
	Aldebaran	E.	80 37 40	2954	79 6 30	2942	77 35 5	2931	76 3 25	2918
	Jupiter	E.	108 18 47	2887	106 46 11	2873	105 13 18	2859	103 40 7	2846
9	α Aquilæ	W.	63 58 56	3804	65 13 54	3764	66 29 34	3725	67 45 55	3687
	Fomalhaut	W.	34 18 10	3584	35 37 2	3509	36 57 16	3440	38 18 47	3379
	α Arietis	E.	37 17 46	2865	35 44 42	2857	34 11 28	2851	32 38 6	2846

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XV^h.	P. L. of Diff.	XVIII^h.	P. L. of Diff.	XXI^h.	P. L. of Diff.
1	Sun	W.	50° 21′ 0″	3332	51° 44′ 35″	3342	53° 7′ 58″	3351	54° 31′ 10″	3362
	Antares	W.	21 22 29	2949	22 53 46	2958	24 24 51	2968	25 55 44	2977
	Fomalhaut	E.	62 39 36	3253	61 14 30	3272	59 49 46	3291	58 25 24	3312
	α Pegasi	E.	84 29 8	3225	83 3 28	3236	81 38 1	3247	80 12 48	3259
2	Sun	W.	61 24 28	3405	62 46 39	3412	64 8 42	3419	65 30 37	3426
	Antares	W.	33 27 28	3017	34 57 20	3024	36 27 3	3030	37 56 38	3037
	Fomalhaut	E.	51 29 36	3422	50 7 44	3446	48 46 20	3473	47 25 26	3501
	α Pegasi	E.	73 10 8	3318	71 46 17	3331	70 22 41	3343	68 59 19	3355
	Mars	E.	101 36 37	2941	100 5 10	2948	98 33 52	2954	97 2 42	2961
3	Sun	W.	72 18 30	3452	73 39 48	3455	75 1 2	3459	76 22 12	3461
	Antares	W.	45 22 51	3060	46 51 50	3064	48 20 44	3066	49 49 35	3069
	Fomalhaut	E.	40 49 19	3672	39 32 2	3715	38 15 31	3763	36 59 50	3814
	α Pegasi	E.	62 6 5	3420	60 44 11	3434	59 22 33	3448	58 1 11	3463
	Mars	E.	89 28 42	2986	87 58 12	2990	86 27 47	2993	84 57 26	2996
4	Sun	W.	83 7 32	3467	84 28 33	3466	85 49 35	3465	87 10 38	3463
	Antares	W.	57 13 14	3073	58 41 56	3073	60 10 38	3073	61 39 21	3071
	α Pegasi	E.	51 18 49	3550	49 59 20	3571	48 40 14	3593	47 21 32	3616
	Mars	E.	77 26 23	3004	75 56 15	3004	74 26 7	3004	72 55 59	3002
	α Arietis	E.	91 13 29	3105	89 45 26	3105	88 17 23	3104	86 49 18	3103
5	Sun	W.	93 56 31	3448	95 17 53	3443	96 39 21	3438	98 0 54	3432
	Antares	W.	69 3 37	3056	70 32 40	3052	72 1 49	3047	73 31 4	3041
	Mars	E.	65 24 47	2990	63 54 22	2987	62 23 53	2983	60 53 19	2978
	α Arietis	E.	79 28 19	3069	77 59 56	3065	76 31 28	3080	75 2 54	3075
6	Sun.	W.	104 50 31	3396	106 12 52	3387	107 35 23	3378	108 58 5	3369
	Antares	W.	80 59 11	3007	82 29 15	2999	83 59 29	2990	85 29 54	2981
	Mars	E.	53 18 50	2949	51 47 33	2941	50 16 6	2934	48 44 30	2926
	α Arietis	E.	67 38 24	3044	66 9 6	3037	64 39 39	3030	63 10 3	3022
	Aldebaran	E.	98 34 4	3078	97 5 28	3070	95 36 42	3060	94 7 44	3052
7	Sun	W.	115 54 27	3314	117 18 22	3302	118 42 31	3290	120 6 54	3277
	Antares	W.	93 5 0	2930	94 36 41	2918	96 8 37	2907	97 40 47	2894
	α Aquilæ	W.	50 6 28	4507	51 10 14	4427	52 15 11	4353	53 21 15	4283
	Mars	E.	41 3 48	2880	39 31 4	2870	37 58 7	2861	36 24 58	2850
	α Arietis	E.	55 39 26	2977	54 8 45	2968	52 37 52	2958	51 6 47	2948
	Aldebaran	E.	86 39 55	3000	85 9 42	2989	83 39 16	2977	82 8 35	2966
8	Sun	W.	127 12 41	3209	128 38 39	3195	130 4 54	3181	131 31 26	3167
	Antares	W.	105 25 38	2830	106 59 27	2816	108 33 34	2802	110 7 59	2788
	α Aquilæ	W.	59 6 44	3989	60 18 34	3939	61 31 14	3892	62 44 42	3847
	Mars	E.	28 35 47	2797	27 1 15	2787	25 26 30	2776	23 51 31	2766
	α Arietis	E.	43 28 14	2899	41 55 54	2891	40 23 23	2881	38 50 40	2873
	Aldebaran	E.	74 31 29	2906	72 59 18	2893	71 26 50	2880	69 54 6	2868
	Jupiter	E.	102 6 39	2832	100 32 53	2818	98 58 49	2804	97 24 26	2789
9	α Aquilæ	W.	69 2 56	3651	70 20 35	3618	71 38 50	3586	72 57 40	3555
	Fomalhaut	W.	39 41 28	3321	41 5 15	3268	42 30 4	3220	43 55 50	3173
	α Arietis	E.	31 4 38	2842	29 31 5	2841	27 57 30	2842	26 23 56	2845

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LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	Aldebaran	E.	68° 21′ 6″	2655	66° 47′ 50″	2643	65° 14′ 18″	2631	63° 40′ 30″	2618
	Jupiter	E.	95 49 44	2775	94 14 43	2760	92 39 23	2745	91 3 43	2731
10	α Aquilæ	W.	74 17 4	3525	75 37 0	3497	76 57 27	3471	78 18 24	3446
	Fomalhaut	W.	45 22 31	3131	46 50 3	3091	48 18 24	3053	49 47 31	3018
	Aldebaran	E.	55 47 29	2759	54 12 7	2748	52 36 31	2738	51 0 41	2728
	Jupiter	E.	83 0 26	2655	81 22 46	2640	79 44 45	2625	78 6 24	2610
	Pollux	E.	98 43 23	2657	97 5 45	2641	95 27 46	2626	93 49 27	2611
11	α Aquilæ	W.	85 9 47	3338	86 33 14	3321	87 57 1	3305	89 21 7	3289
	Fomalhaut	W.	57 23 24	2866	58 56 26	2840	60 30 2	2815	62 4 10	2792
	α Pegasi	W.	37 23 19	3337	38 46 48	3267	40 11 38	3202	41 37 45	3142
	Aldebaran	E.	42 58 37	2692	41 21 46	2687	39 44 49	2685	38 7 49	2685
	Jupiter	E.	69 49 34	2537	68 9 12	2522	66 28 30	2509	64 47 29	2495
	Pollux	E.	85 32 42	2536	83 52 19	2522	82 11 36	2507	80 30 33	2493
12	Fomalhaut	W.	70 2 10	2688	71 39 6	2670	73 16 26	2653	74 54 9	2637
	α Pegasi	W.	49 4 31	2911	50 36 36	2875	52 9 27	2841	53 43 2	2809
	Jupiter	E.	56 17 45	2431	54 34 55	2420	52 51 49	2409	51 8 27	2398
	Pollux	E.	72 0 25	2426	70 17 27	2413	68 34 11	2401	66 50 37	2389
	Regulus	E.	108 47 23	2426	107 4 26	2414	105 21 11	2401	103 37 38	2389
13	Fomalhaut	W.	83 7 52	2568	84 47 31	2557	86 27 25	2547	88 7 33	2537
	α Pegasi	W.	61 40 21	2681	63 17 26	2660	64 54 59	2641	66 32 58	2624
	Mars	W.	31 56 32	2315	33 42 9	2304	35 28 3	2294	37 14 12	2284
	Jupiter	E.	42 28 1	2353	40 43 19	2347	38 58 28	2341	37 13 28	2335
	Pollux	E.	58 8 37	2333	56 23 26	2324	54 38 1	2314	52 52 22	2306
	Regulus	E.	94 55 39	2333	93 10 28	2324	91 25 3	2314	89 39 24	2304
14	α Pegasi	W.	74 48 25	2552	76 28 26	2541	78 8 42	2531	79 49 12	2522
	Mars	W.	46 8 15	2244	47 55 38	2237	49 43 10	2231	51 30 51	2225
	α Arietis	W.	31 31 41	2375	33 15 51	2358	35 0 26	2343	36 45 23	2330
	Pollux	E.	44 1 7	2268	42 14 20	2262	40 27 24	2256	38 40 19	2251
	Regulus	E.	80 47 59	2266	79 1 9	2259	77 14 9	2253	75 27 0	2247
15	Mars	W.	60 31 7	2205	62 19 27	2202	64 7 51	2200	65 56 19	2198
	α Arietis	W.	45 34 15	2283	47 20 39	2277	49 7 13	2271	50 53 55	2266
	Regulus	E.	66 29 23	2227	64 41 35	2223	62 53 42	2221	61 5 46	2218
16	Mars	W.	74 59 4	2196	76 47 38	2196	78 36 11	2197	80 24 43	2199
	α Arietis	W.	59 48 53	2252	61 36 3	2251	63 23 15	2250	65 10 28	2250
	Aldebaran	W.	29 56 46	2487	31 38 17	2462	33 20 24	2439	35 3 3	2421
	Regulus	E.	52 5 32	2216	50 17 28	2216	48 29 24	2216	46 41 21	2218
	Spica	E.	106 5 1	2210	104 16 49	2210	102 28 37	2211	100 40 26	2212
17	Mars	W.	89 26 38	2211	91 14 49	2214	93 2 55	2218	94 50 55	2222
	α Arietis	W.	74 6 22	2256	75 53 26	2258	77 40 27	2262	79 27 23	2264
	Aldebaran	W.	43 41 36	2366	45 26 0	2360	47 10 32	2355	48 55 11	2353
	Regulus	E.	37 41 52	2231	35 54 11	2235	34 6 35	2239	32 19 5	2243
	Spica	E.	91 40 5	2223	89 52 11	2225	88 4 21	2229	86 16 36	2232
	Saturn	E.	100 9 9	2273	98 22 30	2277	96 35 56	2279	94 49 26	2283
	Sun	E.	124 9 42	2555	122 29 45	2557	120 49 51	2560	119 10 1	2564

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9	Aldebaran	E.	62° 6′ 25″	2805	60° 32′ 4″	2794	58° 57′ 28″	2782	57° 22′ 36″	2770
	Jupiter	E.	89 27 44	2715	87 51 24	2701	86 14 45	2686	84 37 46	2670
10	α Aquilæ	W.	79 39 49	3422	81 1 41	3399	82 23 59	3377	83 46 42	3358
	Fomalhaut	W.	51 17 21	2965	52 47 53	2952	54 19 6	2922	55 50 57	2894
	Aldebaran	E.	49 24 38	2719	47 48 23	2710	46 11 57	2703	44 35 21	2697
	Jupiter	E.	76 27 43	2595	74 48 41	2580	73 9 19	2565	71 29 36	2551
	Pollux	E.	92 10 47	2596	90 31 47	2581	88 52 26	2566	87 12 44	2551
11	α Aquilæ	W.	90 45 31	3276	92 10 10	3265	93 35 3	3253	95 0 9	3244
	Fomalhaut	W.	63 38 49	2769	65 13 58	2747	66 49 35	2727	68 25 39	2707
	α Pegasi	W.	43 5 4	3088	44 33 28	3038	46 2 54	2993	47 33 16	2950
	Aldebaran	E.	36 30 49	2687	34 53 52	2692	33 17 1	2700	31 40 21	2713
	Jupiter	E.	63 6 9	2488	61 24 30	2469	59 42 33	2456	58 0 18	2443
	Pollux	E.	78 49 10	2480	77 7 28	2465	75 25 26	2452	73 43 5	2438
12	Fomalhaut	W.	76 32 14	2621	78 10 40	2607	79 49 26	2593	81 28 30	2580
	α Pegasi	W.	55 17 18	2780	56 52 12	2753	58 27 42	2727	60 3 46	2704
	Jupiter	E.	49 24 49	2388	47 40 57	2378	45 56 51	2369	44 12 32	2361
	Pollux	E.	65 6 46	2377	63 22 38	2365	61 38 13	2355	59 53 33	2344
	Regulus	E.	101 53 47	2377	100 9 39	2366	98 25 15	2355	96 40 35	2344
13	Fomalhaut	W.	89 47 55	2528	91 28 29	2520	93 9 14	2513	94 50 9	2507
	α Pegasi	W.	68 11 21	2607	69 50 7	2591	71 29 14	2577	73 8 41	2564
	Mars	W.	39 0 35	2274	40 47 12	2266	42 34 1	2258	44 21 2	2250
	Jupiter	E.	35 28 20	2332	33 43 7	2329	31 57 50	2328	30 12 32	2328
	Pollux	E.	51 6 31	2297	49 20 27	2289	47 34 11	2281	45 47 44	2274
	Regulus	E.	87 53 31	2296	86 7 26	2287	84 21 8	2280	82 34 39	2272
14	α Pegasi	W.	81 29 54	2515	83 10 47	2508	84 51 49	2502	86 33 0	2497
	Mars	W.	53 18 41	2220	55 6 38	2216	56 54 42	2212	58 42 52	2208
	α Arietis	W.	38 30 39	2318	40 16 12	2306	42 2 0	2298	43 48 2	2291
	Pollux	E.	36 53 7	2246	35 5 48	2242	33 18 23	2238	31 30 52	2235
	Regulus	E.	73 39 42	2242	71 52 17	2237	70 4 45	2233	68 17 7	2229
15	Mars	W.	67 44 49	2197	69 33 21	2196	71 21 55	2196	73 10 29	2195
	α Arietis	W.	52 40 45	2262	54 27 41	2259	56 14 41	2256	58 1 45	2253
	Regulus	E.	59 17 46	2217	57 29 44	2216	55 41 41	2216	53 53 37	2215
16	Mars	W.	82 13 12	2200	84 1 39	2203	85 50 2	2205	87 38 22	2208
	α Arietis	W.	66 57 41	2250	68 44 54	2251	70 32 5	2252	72 19 15	2254
	Aldebaran	W.	36 46 8	2405	38 29 35	2392	40 13 21	2382	41 57 22	2373
	Regulus	E.	44 53 21	2220	43 5 23	2223	41 17 29	2225	39 29 38	2228
	Spica	E.	98 52 17	2214	97 4 10	2215	95 16 5	2217	93 28 3	2220
17	Mars	W.	96 38 50	2227	98 26 38	2231	100 14 20	2235	102 1 55	2241
	α Arietis	W.	81 14 15	2268	83 1 2	2272	84 47 43	2275	86 34 19	2280
	Aldebaran	W.	50 39 54	2350	52 24 41	2349	54 9 29	2348	55 54 18	2348
	Regulus	E.	30 31 42	2248	28 44 26	2254	26 57 19	2260	25 10 21	2267
	Spica	E.	84 28 56	2236	82 41 22	2239	80 53 53	2244	79 6 31	2248
	Saturn	E.	93 3 1	2286	91 16 41	2291	89 30 28	2295	87 44 21	2300
	Sun	E.	117 30 16	2567	115 50 36	2572	114 11 2	2575	112 31 33	2580

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18	α Arietis	W.	88° 20′ 48″	2284	90° 7′ 11″	2289	91° 53′ 26″	2294	93° 39′ 34″	2300
	Aldebaran	W.	57 39 7	2349	59 23 55	2350	61 8 41	2353	62 53 24	2355
	JUPITER	W.	30 14 38	2300	32 0 37	2298	33 46 39	2298	35 32 42	2298
	Spica	E.	77 19 15	2253	75 32 6	2258	73 45 4	2263	71 58 10	2268
	SATURN	E.	85 58 21	2304	84 12 27	2309	82 26 41	2315	80 41 3	2320
	SUN	E.	110 52 11	2585	109 12 55	2590	107 33 46	2595	105 54 44	2601
19	Aldebaran	W.	71 35 57	2373	73 20 11	2378	75 4 18	2382	76 48 19	2387
	JUPITER	W.	44 22 34	2308	46 8 22	2312	47 54 4	2316	49 39 40	2320
	Pollux	W.	27 48 14	2307	29 34 3	2312	31 19 45	2317	33 5 19	2322
	Spica	E.	63 5 37	2296	61 19 32	2302	59 33 35	2309	57 47 48	2314
	SATURN	E.	71 54 52	2349	70 10 4	2356	68 25 26	2362	66 40 57	2369
	SUN	E.	97 41 33	2631	96 3 20	2637	94 25 15	2643	92 47 19	2650
20	Aldebaran	W.	85 26 24	2416	87 9 36	2423	88 52 38	2429	90 35 31	2436
	JUPITER	W.	58 26 0	2345	60 10 54	2351	61 55 39	2357	63 40 16	2362
	Pollux	W.	41 51 10	2352	43 35 55	2359	45 20 29	2364	47 4 55	2371
	Spica	E.	49 1 7	2346	47 16 15	2353	45 31 32	2359	43 46 59	2366
	SATURN	E.	58 1 2	2405	56 17 34	2412	54 34 17	2420	52 51 11	2429
	SUN	E.	84 39 59	2686	83 3 0	2692	81 26 10	2701	79 49 31	2707
21	JUPITER	W.	72 21 13	2393	74 4 58	2400	75 48 33	2406	77 31 59	2413
	Pollux	W.	55 44 43	2404	57 28 12	2411	59 11 31	2418	60 54 40	2424
	Spica	E.	35 6 41	2401	33 23 7	2408	31 39 43	2415	29 56 29	2422
	SATURN	E.	44 18 38	2471	42 36 44	2481	40 55 4	2490	39 13 37	2500
	SUN	E.	71 48 43	2748	70 13 4	2754	68 37 36	2762	67 2 18	2770
22	JUPITER	W.	86 6 46	2447	87 49 14	2453	89 31 33	2460	91 13 42	2468
	Pollux	W.	69 27 58	2460	71 10 7	2467	72 52 7	2474	74 33 57	2482
	Regulus	W.	32 42 24	2467	34 24 23	2473	36 6 14	2480	37 47 56	2487
	SUN	E.	59 8 28	2811	57 34 14	2820	56 0 12	2828	54 26 21	2838
23	Pollux	W.	83 0 30	2519	84 41 17	2526	86 21 54	2534	88 2 20	2541
	Regulus	W.	46 13 59	2522	47 54 42	2529	49 35 15	2536	51 15 38	2544
	SUN	E.	46 40 1	2883	45 7 21	2893	43 34 53	2903	42 2 38	2913
24	Pollux	W.	96 21 50	2581	98 1 11	2589	99 40 21	2598	101 19 19	2606
	Regulus	W.	59 34 54	2583	61 14 13	2591	62 53 21	2599	64 32 18	2607
	SUN	E.	34 24 48	2970	32 53 58	2983	31 23 24	2997	29 53 7	3010
28	SUN	W.	13 56 51	3471	15 17 48	3445	16 39 14	3426	18 1 1	3413
	Fomalhaut	E.	72 24 32	3135	70 57 5	3150	69 29 56	3165	68 3 5	3180
	α Pegasi	E.	94 10 19	3138	92 42 55	3146	91 15 41	3155	89 48 38	3164
29	SUN	W.	24 52 18	3396	26 14 39	3398	27 36 58	3401	28 59 13	3405
	Fomalhaut	E.	60 53 35	3265	59 28 43	3283	58 4 12	3303	56 40 4	3324
	α Pegasi	E.	82 36 13	3214	81 10 20	3225	79 44 40	3235	78 19 12	3247
30	SUN	W.	35 49 18	3428	37 11 3	3433	38 32 42	3438	39 54 15	3444
	Fomalhaut	E.	49 45 43	3442	48 24 14	3471	47 3 17	3500	45 42 53	3532
	α Pegasi	E.	71 15 17	3306	69 51 12	3319	68 27 22	3332	67 3 47	3345
	MARS	E.	97 59 45	3048	96 30 32	3056	95 1 28	3063	93 32 33	3069

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18	α Arietis	W.	95° 25′ 34″	2305	97° 11′ 26″	2311	98° 57′ 10″	2317	100° 42′ 45″	2323
	Aldebaran	W.	64 38 4	2357	66 22 40	2361	68 7 11	2364	69 51 37	2368
	JUPITER	W.	37 18 45	2298	39 4 47	2300	40 50 46	2302	42 36 42	2305
	Spica	E.	70 11 23	2273	68 24 44	2279	66 38 13	2285	64 51 51	2290
	SATURN	E.	78 55 32	2325	77 10 9	2331	75 24 55	2337	73 39 49	2343
	SUN	E.	104 15 50	2606	102 37 3	2612	100 58 25	2618	99 19 55	2624
19	Aldebaran	W.	78 32 12	2392	80 15 58	2398	81 59 35	2404	83 43 4	2410
	JUPITER	W.	51 25 10	2324	53 10 34	2330	54 55 50	2335	56 40 59	2340
	Pollux	W.	34 50 46	2328	36 36 5	2334	38 21 15	2339	40 6 17	2346
	Spica	E.	56 2 9	2320	54 16 39	2327	52 31 19	2333	50 46 8	2340
	SATURN	E.	64 56 38	2375	63 12 28	2383	61 28 29	2390	59 44 40	2398
	SUN	E.	91 9 32	2657	89 31 55	2664	87 54 27	2671	86 17 8	2678
20	Aldebaran	W.	92 18 15	2443	94 0 49	2450	95 43 13	2457	97 25 27	2465
	JUPITER	W.	65 24 45	2368	67 9 5	2374	68 53 17	2381	70 37 19	2387
	Pollux	W.	48 49 11	2378	50 33 18	2384	52 17 16	2391	54 1 4	2397
	Spica	E.	42 2 36	2373	40 18 23	2380	38 34 19	2387	36 50 25	2394
	SATURN	E.	51 8 17	2436	49 25 34	2445	47 43 3	2453	46 0 44	2462
	SUN	E.	78 13 1	2716	76 36 42	2722	75 0 32	2730	73 24 32	2738
21	JUPITER	W.	79 15 15	2419	80 58 22	2426	82 41 20	2433	84 24 8	2440
	Pollux	W.	62 37 40	2432	64 20 29	2438	66 3 9	2446	67 45 38	2453
	Spica	E.	28 13 25	2428	26 30 30	2436	24 47 46	2443	23 5 12	2450
	SATURN	E.	37 32 24	2511	35 51 26	2522	34 10 43	2534	32 30 17	2546
	SUN	E.	65 27 11	2778	63 52 14	2786	62 17 28	2795	60 42 53	2803
22	JUPITER	W.	92 55 40	2475	94 37 28	2482	96 19 6	2490	98 0 33	2497
	Pollux	W.	76 15 36	2489	77 57 5	2496	79 38 24	2504	81 19 32	2511
	Regulus	W.	39 29 28	2494	41 10 50	2500	42 52 3	2507	44 33 6	2515
	SUN	E.	52 52 42	2846	51 19 14	2855	49 45 58	2864	48 12 53	2874
23	Pollux	W.	89 42 36	2549	91 22 41	2557	93 2 35	2565	94 42 18	2573
	Regulus	W.	52 55 50	2551	54 35 52	2559	56 15 43	2566	57 55 24	2574
	SUN	E.	40 30 36	2924	38 58 47	2935	37 27 13	2946	35 55 53	2958
24	Pollux	W.	102 58 6	2614	104 36 42	2623	106 15 6	2632	107 53 18	2640
	Regulus	W.	66 11 3	2615	67 49 38	2624	69 28 1	2632	71 6 13	2640
	SUN	E.	28 23 7	3026	26 53 26	3043	25 24 6	3060	23 55 8	3081
28	SUN	W.	19 23 3	3404	20 45 15	3398	22 7 34	3395	23 29 56	3395
	Fomalhaut	E.	66 36 32	3196	65 10 18	3212	63 44 23	3230	62 18 49	3247
	α Pegasi	E.	88 21 46	3173	86 55 5	3183	85 28 36	3193	84 2 18	3204
29	SUN	W.	30 21 24	3408	31 43 31	3414	33 5 32	3418	34 27 28	3423
	Fomalhaut	E.	55 16 20	3345	53 53 1	3369	52 30 8	3391	51 7 41	3416
	α Pegasi	E.	76 53 58	3258	75 28 57	3270	74 4 10	3281	72 39 36	3294
30	SUN	W.	41 15 42	3448	42 37 4	3454	43 58 20	3458	45 19 31	3462
	Fomalhaut	E.	44 23 4	3565	43 3 52	3603	41 45 21	3643	40 27 33	3686
	α Pegasi	E.	65 40 28	3358	64 17 24	3372	62 54 36	3387	61 32 5	3402
	MARS	E.	92 3 46	3077	90 35 8	3082	89 6 37	3089	87 38 14	3096

AT GREENWICH APPARENT NOON.

Day of the Week.	Day of the Month.	THE SUN'S					Sidereal Time of Semi-diameter Passing Meridian.	Equation of Time, to be Subtracted from / Added to Apparent Time.	Diff. for 1 Hour.
		Apparent Right Ascension.	Diff. for 1 Hour.	Apparent Declination.	Diff. for 1 Hour.	Semi-diameter.			
		h m s	s	° ′ ″	″	′ ″	s	m s	s
Sat.	1	16 30 32.50	10.809	S. 21 51 47.6	−23.05	16 15.92	70.29	10 44.80	0.949
SUN.	2	16 34 52.22	10.834	22 0 48.1	21.99	16 16.07	70.38	10 21.70	0.974
Mon.	3	16 39 12.54	10.859	22 9 23.2	20.92	16 16.22	70.46	9 58.00	0.999
Tues.	4	16 43 33.43	10.882	22 17 32.4	−19.84	16 16.37	70.54	9 33.74	1.023
Wed.	5	16 47 54.88	10.904	22 25 15.7	18.75	16 16.51	70.61	9 8.92	1.045
Thur.	6	16 52 16.84	10.925	22 32 32.6	17.65	16 16.65	70.68	8 43.58	1.066
Frid.	7	16 56 39.31	10.946	22 39 23.1	−16.55	16 16.78	70.75	8 17.75	1.086
Sat.	8	17 1 2.24	10.965	22 45 47.0	15.44	16 16.91	70.82	7 51.44	1.105
SUN.	9	17 5 25.62	10.983	22 51 43.9	14.31	16 17.03	70.88	7 24.69	1.123
Mon.	10	17 9 49.42	11.000	22 57 13.8	−13.18	16 17.15	70.93	6 57.53	1.140
Tues.	11	17 14 13.62	11.016	23 2 16.6	12.04	16 17.26	70.98	6 29.97	1.156
Wed.	12	17 18 38.18	11.031	23 6 51.9	10.90	16 17.36	71.03	6 2.04	1.171
Thur.	13	17 23 3.08	11.044	23 10 59.7	− 9.75	16 17.46	71.08	5 33.77	1.184
Frid.	14	17 27 28.30	11.056	23 14 39.9	8.60	16 17.55	71.12	5 5.19	1.196
Sat.	15	17 31 53.81	11.068	23 17 52.3	7.44	16 17.64	71.15	4 36.32	1.208
SUN.	16	17 36 19.58	11.078	23 20 36.8	− 6.28	16 17.72	71.18	4 7.19	1.218
Mon.	17	17 40 45.57	11.087	23 22 53.2	5.11	16 17.79	71.21	3 37.84	1.227
Tues.	18	17 45 11.76	11.094	23 24 41.7	3.93	16 17.86	71.23	3 8.29	1.235
Wed.	19	17 49 38.10	11.101	23 26 1.9	− 2.75	16 17.92	71.25	2 38.58	1.241
Thur.	20	17 54 4.59	11.106	23 26 53.9	1.58	16 17.96	71.26	2 8.74	1.246
Frid.	21	17 58 31.19	11.109	23 27 17.6	− 0.40	16 18.03	71.26	1 38.78	1.249
Sat.	22	18 2 57.84	11.111	23 27 13.0	+ 0.78	16 18.08	71.27	1 8.78	1.251
SUN.	23	18 7 24.52	11.111	23 26 40.0	1.96	16 18.13	71.27	0 38.74	1.251
Mon.	24	18 11 51.18	11.110	23 25 38.7	3.14	16 18.17	71.26	0 8.72	1.250
Tues.	25	18 16 17.79	11.107	23 24 9.1	+ 4.32	16 18.20	71.25	0 21.26	1.247
Wed.	26	18 20 44.32	11.103	23 22 11.2	5.50	16 18.23	71.23	0 51.15	1.243
Thur.	27	18 25 10.72	11.097	23 19 45.0	6.68	16 18.26	71.21	1 20.91	1.237
Frid.	28	18 29 36.96	11.089	23 16 50.6	+ 7.85	16 18.29	71.19	1 50.50	1.229
Sat.	29	18 34 3.00	11.079	23 13 28.2	9.01	16 18.31	71.16	2 19.90	1.220
SUN.	30	18 38 28.79	11.069	23 9 37.8	10.17	16 18.33	71.13	2 49.05	1.209
Mon.	31	18 42 54.30	11.056	23 5 19.6	11.33	16 18.34	71.09	3 17.93	1.197
Tues.	32	18 47 19.51	11.044	S. 23 0 33.6	+12.49	16 18.35	71.05	3 46.50	1.184

NOTE.—The mean time of semidiameter passing may be found by subtracting 0s.19 from the sidereal time.
The sign — prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

AT GREENWICH MEAN NOON.

Day of the Week.	Day of the Month.	THE SUN'S Apparent Right Ascension.	THE SUN'S Diff. for 1 Hour.	THE SUN'S Apparent Declination.	THE SUN'S Diff. for 1 Hour.	Equation of Time, to be Added to / Subtracted from Mean Time.	Diff. for 1 Hour.	Sidereal Time, or Right Ascension of Mean Sun.
		h m s	s	° ′ ″	″	m s	s	h m s
Sat.	1	16 30 34.44	10.806	S. 21 51 51.7	−23.04	10 44.63	0.949	16 41 19.06
SUN.	2	16 34 54.09	10.831	22 0 51.9	21.98	10 21.53	0.974	16 45 15.62
Mon.	3	16 39 14.34	10.856	22 9 26.6	20.91	9 57.84	0.999	16 49 12.18
Tues.	4	16 43 35.17	10.879	22 17 35.6	−19.83	9 33 57	1.023	16 53 8.74
Wed.	5	16 47 56.54	10.901	22 25 18.5	18.74	9 8.76	1.045	16 57 5.30
Thur.	6	16 52 18.43	10.922	22 32 35.2	17.64	8 43.43	1.066	17 1 1.86
Frid.	7	16 56 40.82	10.943	22 39 25.4	−16.54	8 17.60	1.086	17 4 58.42
Sat.	8	17 1 3.68	10.962	22 45 49.0	15.43	7 51.30	1.105	17 8 54.98
SUN.	9	17 5 26.98	10.980	22 51 45.7	14.30	7 24.56	1.123	17 12 51.53
Mon.	10	17 9 50.70	10.996	22 57 15.4	−13.17	6 57.40	1.140	17 16 48.09
Tues.	11	17 14 14.81	11.012	23 2 17.8	12.03	6 29.84	1.156	17 20 44.65
Wed.	12	17 18 39.29	11.027	23 6 53.0	10.89	6 1.92	1.171	17 24 41.21
Thur.	13	17 23 4.11	11.040	23 11 0.6	− 9.74	5 33.66	1.184	17 28 37.77
Frid.	14	17 27 29.24	11.052	23 14 40.6	8.59	5 5.09	1.196	17 32 34.33
Sat.	15	17 31 54.66	11.064	23 17 52.8	7.43	4 36.23	1.208	17 36 30.89
SUN.	16	17 36 20.34	11.074	23 20 37.2	− 6.27	4 7.11	1.218	17 40 27.45
Mon.	17	17 40 46.24	11.083	23 22 53.6	5.10	3 37.77	1.227	17 44 24.01
Tues.	18	17 45 12.34	11.090	23 24 41.9	3.93	3 8.23	1.234	17 48 20.56
Wed.	19	17 49 38.60	11.097	23 26 2.0	− 2.75	2 38.52	1.240	17 52 17.12
Thur.	20	17 54 5.00	11.102	23 26 53.9	1.58	2 8.69	1.245	17 56 13.68
Frid.	21	17 58 31.49	11.105	23 27 17.6	− 0.40	1 38.75	1.249	18 0 10.24
Sat.	22	18 2 58.05	11.107	23 27 13.0	+ 0.78	1 8.75	1.251	18 4 6.80
SUN.	23	18 7 24.63	11.107	23 26 40.0	1.96	0 38.73	1.251	18 8 3.36
Mon.	24	18 11 51.20	11.106	23 25 38.7	3.14	0 8.72	1.250	18 11 59.92
Tues.	25	18 16 17.73	11.103	23 24 9.1	+ 4.32	0 21.25	1.247	18 15 56.48
Wed.	26	18 20 44.16	11.099	23 22 11.2	5.50	0 51.13	1.242	18 19 53.04
Thur.	27	18 25 10.47	11.093	23 19 45.1	6.68	1 20.88	1.236	18 23 49.60
Frid.	28	18 29 36.62	11.085	23 16 50.9	+ 7.85	1 50.46	1.228	18 27 46.16
Sat.	29	18 34 2.56	11.076	23 13 28.6	9.01	2 19.85	1.219	18 31 42.71
SUN.	30	18 38 28.27	11.065	23 9 38.3	10.17	2 48.99	1.208	18 35 39.27
Mon.	31	18 42 53.69	11.053	23 5 20.2	11.33	3 17.86	1.196	18 39 35.83
Tues.	32	18 47 18.81	11.039	S. 23 0 34.4	+12.48	3 46.42	1.183	18 43 32.39

NOTE.—The semidiameter for mean noon may be assumed the same as that for apparent noon. The sign − prefixed to the hourly change of declination indicates that south declinations are increasing; the sign + indicates that south declinations are decreasing.

Diff. for 1 Hour, +9ˢ.8565. (Table III.)

AT GREENWICH MEAN NOON.

Day of the Month.	Day of the Year.	THE SUN'S				Logarithm of the Radius Vector of the Earth.	Diff. for 1 Hour.	Mean Time of Sidereal Noon.
		TRUE LONGITUDE.		Diff. for 1 Hour.	LATITUDE.			
		λ	λ′					
		° ′ ″	′ ″	″	″			h m s
1	335	249 20 3.7	19 17.7	152.19	− 0.48	9.9937610	−28.7	7 17 29.07
2	336	250 20 56.7	20 10.5	152.22	0.40	9.9936929	28.1	7 13 33.16
3	337	251 21 50.4	21 4.0	152.25	0.30	9.9936262	27.5	7 9 37.24
4	338	252 22 44.9	21 58.3	152.29	− 0.18	9.9935611	−26.6	7 5 41.33
5	339	253 23 40.2	22 53.4	152.32	− 0.06	9.9934983	25.8	7 1 45.42
6	340	254 24 36.2	23 49.2	152.35	+ 0.07	9.9934372	25.0	6 57 49.50
7	341	255 25 32.9	24 45.7	152.38	+ 0.20	9.9933783	−24.0	6 53 53.59
8	342	256 26 30.2	25 42.8	152.40	0.32	9.9933218	23.0	6 49 57.68
9	343	257 27 28.2	26 40.7	152.43	0.43	9.9932677	22.0	6 46 1.77
10	344	258 28 26.8	27 39.1	152.46	+ 0.51	9.9932160	−21.0	6 42 5.85
11	345	259 29 26.2	28 38.3	152.49	0.56	9.9931671	19.8	6 38 9.94
12	346	260 30 26.3	29 38.2	152.52	0.59	9.9931209	18.7	6 34 14.03
13	347	261 31 27.2	30 38.9	152.55	+ 0.59	9.9930771	−17.6	6 30 18.11
14	348	262 32 28.8	31 40.3	152.59	0.53	9.9930363	16.5	6 26 22.20
15	349	263 33 31.2	32 42.5	152.62	0.47	9.9929981	15.4	6 22 26.29
16	350	264 34 34.4	38 45.5	152.65	+ 0.39	9.9929626	−14.2	6 18 30.37
17	351	265 35 38.5	34 49.4	152.69	0.28	9.9929297	13.1	6 14 34.46
18	352	266 36 43.3	35 54.0	152.72	0.15	9.9928993	12.2	6 10 38.55
19	353	267 37 49.1	36 59.6	152.75	+ 0.02	9.9928713	−11.2	6 6 42.64
20	354	268 38 55.6	38 5.9	152.79	− 0.11	9.9928455	10.3	6 2 46.72
21	355	269 40 2.9	39 13.0	152.82	0.24	9.9928219	9.4	5 58 50.81
22	356	270 41 10.8	40 20.7	152.85	− 0.35	9.9928002	− 8.6	5 54 54.90
23	357	271 42 19.5	41 29.2	152.87	0.45	9.9927805	7.9	5 50 58.98
24	358	272 43 28.7	42 38.2	152.89	0.52	9.9927625	7.1	5 47 3.07
25	359	273 44 38.4	43 47.7	152.91	− 0.56	9.9927464	− 6.3	5 43 7.16
26	360	274 45 48.6	44 57.7	152.93	0.58	9.9927321	5.7	5 39 11.24
27	361	275 46 58.9	46 7.8	152.94	0.56	9.9927192	5.0	5 35 15.33
28	362	276 48 9.6	47 18.3	152.95	− 0.51	9.9927080	− 4.3	5 31 19.42
29	363	277 49 20.3	48 28.8	152.95	0.44	9.9926985	3.6	5 27 23.50
30	364	278 50 31.0	49 39.3	152.94	0.34	9.9926908	2.9	5 23 27.59
31	365	279 51 41.5	50 49.6	152.94	0.23	9.9926848	2.1	5 19 31.68
32	366	280 52 51.9	51 59.8	152.93	− 0.10	9.9926805	− 1.3	5 15 35.76

NOTE.—The numbers in column λ correspond to the true equinox of the date; in column λ′ to the mean equinox of January 0^d.0.

Diff. for 1 Hour, —9^s.8296. (Table II.)

GREENWICH MEAN TIME.

Day of the Month.	THE MOON'S									
	SEMIDIAMETER.		HORIZONTAL PARALLAX.				UPPER TRANSIT.		AGE.
	Noon.	Midnight.	Noon.	Diff. for 1 Hour.	Midnight.	Diff. for 1 Hour.	Meridian of Greenwich.	Diff. for 1 Hour.	Noon.
	′ ″	′ ″	′ ″	″	′ ″	″	h m	m	d
1	14 48.6	14 47.3	54 14.3	−0.46	54 9.8	−0.29	3 20.2	2.02	4.1
2	14 46.7	14 46.7	54 7.4	−0.10	54 7.3	+0.09	4 7.1	1.90	5.1
3	14 47.3	14 48.6	54 9.6	+0.30	54 14.4	0.50	4 51.1	1.78	6.1
4	14 50.6	14 53.3	54 21.7	+0.72	54 31.7	+0.94	5 32.9	1.71	7.1
5	14 56.7	15 0.8	54 44.3	1.15	54 59.3	1.36	6 13.4	1.67	8.1
6	15 5.6	15 11.0	55 16.9	1.56	55 36.7	1.74	6 53.7	1.69	9.1
7	15 17.0	15 23.4	55 58.7	+1.90	56 22.4	+2.04	7 35.2	1.77	10.1
8	15 30.3	15 37.5	56 47.6	2.15	57 13.9	2.21	8 19.2	1.91	11.1
9	15 44.8	15 52.1	57 40.7	2.24	58 7.7	2.22	9 7.3	2.10	12.1
10	15 59.3	16 6.2	58 34.0	+2.15	58 59.3	+2.03	10 0.5	2.34	13.1
11	16 12.6	16 18.3	59 22.8	1.85	59 43.8	1.64	10 59.7	2.58	14.1
12	16 23.3	16 27.3	60 2.1	1.38	60 16.9	1.08	12 3.8	2.74	15.1
13	16 30.3	16 32.3	60 28.1	+0.76	60 35.2	+0.42	13 10.1	2.75	16.1
14	16 33.1	16 32.8	60 38.2	+0.08	60 37.2	−0.24	14 15.0	2.65	17.1
15	16 31.5	16 29.3	60 32.5	−0.54	60 24.2	0.82	15 15.5	2.41	18.1
16	16 26.2	16 22.4	60 12.8	−1.06	59 58.8	−1.26	16 10.7	2.20	19.1
17	16 17.9	16 13.1	59 42.6	1.42	59 24.8	1.53	17 1.4	2.03	20.1
18	16 7.9	16 2.6	59 5.8	1.61	58 46.1	1.66	17 48.7	1.93	21.1
19	15 57.1	15 51.6	58 26.0	−1.68	58 5.9	−1.66	18 34.3	1.88	22.1
20	15 46.2	15 40.9	57 46.1	1.63	57 26.7	1.59	19 19.6	1.90	23.1
21	15 35.9	15 30.9	57 8.0	1.53	56 49.9	1.47	20 5.9	1.96	24.1
22	15 26.2	15 21.8	56 32.7	−1.40	56 16.3	−1.33	20 54.0	2.05	25.1
23	15 17.5	15 13.5	56 0.7	1.26	55 46.0	1.19	21 44.5	2.15	26.1
24	15 9.7	15 6.2	55 32.1	1.13	55 19.0	1.06	22 36.9	2.21	27.1
25	15 2.8	14 59.7	55 6.7	−0.99	54 55.3	−0.92	23 30.4	2.23	28.1
26	14 56.8	14 54.2	54 44.7	0.85	54 35.0	0.77	δ		29.1
27	14 51.8	14 49.7	54 26.2	0.69	54 18.5	0.59	0 23.4	2.17	0.4
28	14 47.9	14 46.5	54 12.0	−0.49	54 6.7	−0.39	1 14.2	2.06	1.4
29	14 45.4	14 44.8	54 5.7	−0.27	54 0.3	−0.13	2 2.2	1.94	2.4
30	14 44.5	14 44.8	53 59.5	+0.01	54 0.5	+0.17	2 47.2	1.82	3.4
31	14 45.6	14 47.0	54 3.5	0.33	54 8.5	0.51	3 29.5	1.71	4.4
32	14 49.0	14 51.6	54 15.8	+0.70	54 25.3	+0.90	4 9.6	1.65	5.4

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 1.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	19 54 59.36	2.1343	S. 25 22 9.5	6.898
1	19 57 7.27	2.1294	25 15 12.2	7.011
2	19 59 14.89	2.1246	25 8 8.2	7.122
3	20 1 22.22	2.1197	25 0 57.5	7.233
4	20 3 29.26	2.1148	24 53 40.2	7.343
5	20 5 36.00	2.1098	24 46 16.3	7.452
6	20 7 42.44	2.1049	24 38 45.9	7.561
7	20 9 48.59	2.1000	24 31 9.0	7.668
8	20 11 54.44	2.0951	24 23 25.7	7.774
9	20 14 0.00	2.0902	24 15 36.1	7.879
10	20 16 5.26	2.0852	24 7 40.2	7.984
11	20 18 10.22	2.0802	23 59 38.0	8.088
12	20 20 14.88	2.0752	23 51 29.6	8.192
13	20 22 19.25	2.0703	23 43 15.0	8.293
14	20 24 23.32	2.0654	23 34 54.4	8.393
15	20 26 27.10	2.0605	23 26 27.8	8.493
16	20 28 30.58	2.0556	23 17 55.2	8.593
17	20 30 33.77	2.0507	23 9 16.6	8.691
18	20 32 36.66	2.0458	23 0 32.2	8.788
19	20 34 39.26	2.0409	22 51 42.0	8.885
20	20 36 41.57	2.0361	22 42 46.0	8.982
21	20 38 43.59	2.0312	22 33 44.2	9.077
22	20 40 45.32	2.0264	22 24 36.8	9.170
23	20 42 46.76	2.0217	S. 22 15 23.8	9.262

SUNDAY 2.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 44 47.92	2.0169	S. 22 6 5.3	9.354
1	20 46 48.79	2.0121	21 56 41.3	9.446
2	20 48 49.37	2.0073	21 47 11.8	9.537
3	20 50 49.67	2.0027	21 37 36.9	9.626
4	20 52 49.69	1.9980	21 27 56.7	9.714
5	20 54 49.43	1.9933	21 18 11.2	9.802
6	20 56 48.89	1.9887	21 8 20.5	9.888
7	20 58 48.07	1.9841	20 58 24.6	9.974
8	21 0 46.98	1.9796	20 48 23.6	10.060
9	21 2 45.62	1.9751	20 38 17.4	10.145
10	21 4 43.99	1.9706	20 28 6.2	10.228
11	21 6 42.09	1.9662	20 17 50.1	10.310
12	21 8 39.93	1.9617	20 7 29.0	10.392
13	21 10 37.50	1.9573	19 57 3.0	10.473
14	21 12 34.81	1.9531	19 46 32.2	10.553
15	21 14 31.87	1.9488	19 35 56.7	10.632
16	21 16 28.67	1.9445	19 25 16.4	10.711
17	21 18 25.21	1.9403	19 14 31.4	10.788
18	21 20 21.50	1.9361	19 3 41.8	10.865
19	21 22 17.54	1.9320	18 52 47.6	10.942
20	21 24 13.34	1.9279	18 41 48.8	11.017
21	21 26 8.89	1.9238	18 30 45.6	11.091
22	21 28 4.20	1.9199	18 19 37.9	11.165
23	21 29 59.28	1.9160	18 8 25.8	11.237
24	21 31 54.12	1.9121	S. 17 57 9.4	11.309

MONDAY 3.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	21 31 54.12	1.9121	S. 17 57 9.4	11.309
1	21 33 48.73	1.9082	17 45 48.7	11.381
2	21 35 43.11	1.9045	17 34 23.7	11.452
3	21 37 37.27	1.9008	17 22 54.5	11.521
4	21 39 31.21	1.8971	17 11 21.2	11.589
5	21 41 24.92	1.8934	16 59 43.8	11.657
6	21 43 18.41	1.8898	16 48 2.3	11.725
7	21 45 11.69	1.8863	16 36 16.8	11.792
8	21 47 4.77	1.8829	16 24 27.3	11.858
9	21 48 57.64	1.8795	16 12 33.8	11.924
10	21 50 50.31	1.8762	16 0 36.4	11.988
11	21 52 42.78	1.8729	15 48 35.2	12.051
12	21 54 35.06	1.8697	15 36 30.3	12.114
13	21 56 27.14	1.8665	15 24 21.6	12.176
14	21 58 19.04	1.8634	15 12 9.2	12.237
15	22 0 10.75	1.8603	14 59 53.1	12.298
16	22 2 2.28	1.8573	14 47 33.4	12.358
17	22 3 53.63	1.8543	14 35 10.1	12.418
18	22 5 44.80	1.8514	14 22 43.2	12.477
19	22 7 35.80	1.8487	14 10 12.8	12.535
20	22 9 26.64	1.8460	13 57 39.0	12.591
21	22 11 17.32	1.8433	13 45 1.9	12.647
22	22 13 7.84	1.8407	13 32 21.4	12.703
23	22 14 58.21	1.8382	S. 13 19 37.5	12.759

TUESDAY 4.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 16 48.42	1.8357	S. 13 6 50.3	12.813
1	22 18 38.49	1.8333	12 53 59.9	12.867
2	22 20 28.42	1.8309	12 41 6.3	12.920
3	22 22 18.20	1.8286	12 28 9.5	12.972
4	22 24 7.85	1.8264	12 15 9.6	13.023
5	22 25 57.37	1.8243	12 2 6.7	13.074
6	22 27 46.77	1.8222	11 49 0.7	13.125
7	22 29 36.04	1.8202	11 35 51.7	13.174
8	22 31 25.20	1.8183	11 22 39.8	13.223
9	22 33 14.24	1.8164	11 9 24.9	13.272
10	22 35 3.17	1.8147	10 56 7.1	13.320
11	22 36 52.00	1.8130	10 42 46.5	13.366
12	22 38 40.73	1.8113	10 29 23.2	13.412
13	22 40 29.36	1.8097	10 15 57.1	13.458
14	22 42 17.90	1.8082	10 2 28.3	13.503
15	22 44 6.35	1.8068	9 48 56.7	13.548
16	22 45 54.72	1.8055	9 35 22.5	13.591
17	22 47 43.01	1.8042	9 21 45.8	13.634
18	22 49 31.22	1.8029	9 8 6.5	13.676
19	22 51 19.36	1.8018	8 54 24.7	13.718
20	22 53 7.44	1.8007	8 40 40.4	13.759
21	22 54 55.45	1.7997	8 26 53.6	13.800
22	22 56 43.41	1.7989	8 13 4.4	13.839
23	22 58 31.32	1.7981	7 59 12.9	13.878
24	23 0 19.18	1.7973	S. 7 45 19.1	13.916

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

WEDNESDAY 5.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	23 0 19.18	1.7973	S. 7 45 19.1	13.916
1	23 2 7.00	1.7966	7 31 23.0	13.954
2	23 3 54.78	1.7960	7 17 24.6	13.992
3	23 5 42.52	1.7954	7 3 24.0	14.028
4	23 7 30.23	1.7950	6 49 21.2	14.063
5	23 9 17.92	1.7947	6 35 16.4	14.097
6	23 11 5.59	1.7944	6 21 9.5	14.132
7	23 12 53.24	1.7941	6 7 0.6	14.166
8	23 14 40.88	1.7940	5 52 49.6	14.200
9	23 16 28.52	1.7940	5 38 36.6	14.232
10	23 18 16.16	1.7940	5 24 21.7	14.263
11	23 20 3.80	1.7941	5 10 5.0	14.294
12	23 21 51.45	1.7942	4 55 46.4	14.325
13	23 23 39.11	1.7945	4 41 26.0	14.355
14	23 25 26.79	1.7948	4 27 3.8	14.384
15	23 27 14.49	1.7952	4 12 39.9	14.412
16	23 29 2.22	1.7958	3 58 14.3	14.440
17	23 30 49.99	1.7964	3 43 47.1	14.467
18	23 32 37.79	1.7970	3 29 18.3	14.493
19	23 34 25.63	1.7978	3 14 47.9	14.519
20	23 36 13.52	1.7987	3 0 16.0	14.543
21	23 38 1.47	1.7997	2 45 42.7	14.567
22	23 39 49.48	1.8007	2 31 7.9	14.591
23	23 41 37.55	1.8017	S. 2 16 31.7	14.614

THURSDAY 6.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	23 43 25.68	1.8028	S. 2 1 54.2	14.636
1	23 45 13.89	1.8041	1 47 15.4	14.657
2	23 47 2.18	1.8054	1 32 35.3	14.678
3	23 48 50.54	1.8068	1 17 54.0	14.698
4	23 50 38.99	1.8083	1 3 11.5	14.717
5	23 52 27.54	1.8100	0 48 27.9	14.736
6	23 54 16.19	1.8117	0 33 43.2	14.754
7	23 56 4.94	1.8134	0 18 57.4	14.771
8	23 57 53.80	1.8153	S. 0 4 10.7	14.787
9	23 59 42.78	1.8173	N. 0 10 37.0	14.802
10	0 1 31.88	1.8193	0 25 25.6	14.817
11	0 3 21.10	1.8213	0 40 15.0	14.830
12	0 5 10.44	1.8235	0 55 5.2	14.843
13	0 6 59.92	1.8259	1 9 56.2	14.856
14	0 8 49.55	1.8283	1 24 47.9	14.867
15	0 10 39.32	1.8307	1 39 40.3	14.878
16	0 12 29.24	1.8333	1 54 33.3	14.887
17	0 14 19.32	1.8360	2 9 26.8	14.896
18	0 16 9.56	1.8387	2 24 20.8	14.904
19	0 17 59.96	1.8415	2 39 15.3	14.912
20	0 19 50.54	1.8445	2 54 10.2	14.918
21	0 21 41.30	1.8475	3 9 5.5	14.924
22	0 23 32.24	1.8506	3 24 1.1	14.928
23	0 25 23.37	1.8537	3 38 56.9	14.932
24	0 27 14.69	1.8570	N. 3 53 52.9	14.935

FRIDAY 7.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	0 27 14.69	1.8570	N. 3 53 52.9	14.935
1	0 29 6.21	1.8604	4 8 49.1	14.937
2	0 30 57.94	1.8639	4 23 45.3	14.938
3	0 32 49.88	1.8674	4 38 41.6	14.938
4	0 34 42.03	1.8711	4 53 37.9	14.937
5	0 36 34.41	1.8748	5 8 34.1	14.936
6	0 38 27.01	1.8786	5 23 30.2	14.933
7	0 40 19.84	1.8826	5 38 26.1	14.929
8	0 42 12.92	1.8867	5 53 21.7	14.924
9	0 44 6.24	1.8908	6 8 17.0	14.918
10	0 45 59.81	1.8950	6 23 11.9	14.912
11	0 47 53.64	1.8992	6 38 6.4	14.904
12	0 49 47.72	1.9036	6 53 0.4	14.896
13	0 51 42.07	1.9081	7 7 53.9	14.886
14	0 53 36.69	1.9127	7 22 46.7	14.874
15	0 55 31.59	1.9173	7 37 38.8	14.862
16	0 57 26.77	1.9221	7 52 30.2	14.849
17	0 59 22.24	1.9270	8 7 20.7	14.834
18	1 1 18.01	1.9320	8 22 10.3	14.819
19	1 3 14.08	1.9370	8 36 59.0	14.803
20	1 5 10.45	1.9421	8 51 46.7	14.786
21	1 7 7.13	1.9473	9 6 33.3	14.767
22	1 9 4.13	1.9527	9 21 18.7	14.747
23	1 11 1.45	1.9581	N. 9 36 2.9	14.726

SATURDAY 8.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	1 12 59.10	1.9636	N. 9 50 45.8	14.703
1	1 14 57.08	1.9692	10 5 27.3	14.680
2	1 16 55.40	1.9749	10 20 7.4	14.655
3	1 18 54.07	1.9807	10 34 45.9	14.628
4	1 20 53.09	1.9866	10 49 22.8	14.601
5	1 22 52.46	1.9924	11 3 58.0	14.572
6	1 24 52.18	1.9984	11 18 31.4	14.542
7	1 26 52.27	2.0047	11 33 3.0	14.511
8	1 28 52.74	2.0110	11 47 32.7	14.478
9	1 30 53.59	2.0173	12 2 0.3	14.443
10	1 32 54.82	2.0237	12 16 25.8	14.408
11	1 34 56.44	2.0303	12 30 49.2	14.372
12	1 36 58.46	2.0370	12 45 10.4	14.333
13	1 39 0.88	2.0437	12 59 29.2	14.293
14	1 41 3.70	2.0504	13 13 45.6	14.252
15	1 43 6.92	2.0572	13 27 59.4	14.209
16	1 45 10.56	2.0642	13 42 10.6	14.165
17	1 47 14.62	2.0713	13 56 19.2	14.120
18	1 49 19.11	2.0784	14 10 25.0	14.072
19	1 51 24.03	2.0856	14 24 27.9	14.023
20	1 53 29.39	2.0929	14 38 27.8	13.973
21	1 55 35.18	2.1003	14 52 24.7	13.922
22	1 57 41.42	2.1077	15 6 18.4	13.868
23	1 59 48.11	2.1153	15 20 8.8	13.813
24	2 1 55.26	2.1230	N. 15 33 55.9	13.756

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	SUNDAY 9.					TUESDAY 11.			
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	2 1 55.26	2.1230	N.15 33 55.9	13.756	0	3 53 43.89	2.5464	N.24 53 44.6	8.798
1	2 4 2.87	2.1307	15 47 39.5	13.697	1	3 56 16.94	2.5551	25 2 27.9	8.644
2	2 6 10.94	2.1384	16 1 19.6	13.637	2	3 58 50.51	2.5638	25 11 1.9	8.487
3	2 8 19.48	2.1463	16 14 56.0	13.575	3	4 1 24.60	2.5725	25 19 26.4	8.329
4	2 10 28.50	2.1543	16 28 28.7	13.512	4	4 3 59.21	2.5812	25 27 41.4	8.170
5	2 12 38.00	2.1623	16 41 57.5	13.447	5	4 6 34.34	2.5897	25 35 46.8	8.008
6	2 14 47.98	2.1704	16 55 22.3	13.379	6	4 9 9.97	2.5981	25 43 42.4	7.844
7	2 16 58.45	2.1786	17 8 43.0	13.311	7	4 11 46.11	2.6065	25 51 28.1	7.677
8	2 19 9.41	2.1868	17 21 59.6	13.241	8	4 14 22.75	2.6147	25 59 3.7	7.509
9	2 21 20.87	2.1952	17 35 11.9	13.168	9	4 16 59.87	2.6228	26 6 29.2	7.339
10	2 23 32.83	2.2035	17 48 19.8	13.094	10	4 19 37.48	2.6308	26 13 44.4	7.167
11	2 25 45.29	2.2118	18 1 23.2	13.018	11	4 22 15.57	2.6387	26 20 49.2	6.993
12	2 27 58.25	2.2203	18 14 22.0	12.941	12	4 24 54.13	2.6466	26 27 43.6	6.818
13	2 30 11.72	2.2289	18 27 16.1	12.861	13	4 27 33.16	2.6543	26 34 27.4	6.640
14	2 32 25.71	2.2376	18 40 5.3	12.779	14	4 30 12.64	2.6618	26 41 0.4	6.459
15	2 34 40.23	2.2463	18 52 49.6	12.695	15	4 32 52.57	2.6692	26 47 22.5	6.277
16	2 36 55.27	2.2550	19 5 28.8	12.610	16	4 35 32.94	2.6764	26 53 33.7	6.095
17	2 39 10.83	2.2637	19 18 2.8	12.524	17	4 38 13.74	2.6836	26 59 33.9	5.910
18	2 41 26.92	2.2726	19 30 31.6	12.435	18	4 40 54.97	2.6906	27 5 22.9	5.723
19	2 43 43.54	2.2815	19 42 55.0	12.343	19	4 43 36.61	2.6974	27 11 0.6	5.534
20	2 46 0.70	2.2904	19 55 12.8	12.249	20	4 46 18.66	2.7041	27 16 27.0	5.345
21	2 48 18.39	2.2993	20 7 24.9	12.154	21	4 49 1.10	2.7106	27 21 42.0	5.154
22	2 50 36.62	2.3083	20 19 31.3	12.057	22	4 51 43.93	2.7170	27 26 45.5	4.960
23	2 52 55.39	2.3174	N.20 31 31.8	11.957	23	4 54 27.14	2.7232	N.27 31 37.2	4.764
	MONDAY 10.					WEDNESDAY 12.			
0	2 55 14.71	2.3266	N.20 43 26.2	11.856	0	4 57 10.71	2.7292	N.27 36 17.1	4.567
1	2 57 34.58	2.3357	20 55 14.5	11.753	1	4 59 54.64	2.7350	27 40 45.2	4.370
2	2 59 54.99	2.3448	21 6 56.6	11.648	2	5 2 38.91	2.7407	27 45 1.5	4.172
3	3 2 15.95	2.3539	21 18 32.3	11.541	3	5 5 23.52	2.7462	27 49 5.8	3.971
4	3 4 37.46	2.3632	21 30 1.5	11.432	4	5 8 8.45	2.7514	27 52 58.0	3.768
5	3 6 59.53	2.3724	21 41 24.1	11.320	5	5 10 53.69	2.7564	27 56 38.0	3.565
6	3 9 22.15	2.3817	21 52 39.9	11.206	6	5 13 39.22	2.7613	28 0 5.8	3.361
7	3 11 45.33	2.3909	22 3 48.8	11.090	7	5 16 25.04	2.7660	28 3 21.3	3.155
8	3 14 9.06	2.4001	22 14 50.7	10.973	8	5 19 11.14	2.7705	28 6 24.4	2.948
9	3 16 33.34	2.4093	22 25 45.6	10.854	9	5 21 57.50	2.7747	28 9 15.1	2.741
10	3 18 58.18	2.4186	22 36 33.2	10.731	10	5 24 44.11	2.7788	28 11 53.3	2.532
11	3 21 23.58	2.4279	22 47 13.3	10.606	11	5 27 30.96	2.7827	28 14 19.0	2.322
12	3 23 49.53	2.4372	22 57 45.9	10.480	12	5 30 18.03	2.7863	28 16 32.0	2.111
13	3 26 16.04	2.4464	23 8 10.9	10.352	13	5 33 5.31	2.7896	28 18 32.3	1.899
14	3 28 43.10	2.4556	23 18 28.1	10.221	14	5 35 52.78	2.7927	28 20 19.9	1.687
15	3 31 10.71	2.4648	23 28 37.4	10.088	15	5 38 40.44	2.7957	28 21 54.8	1.475
16	3 33 38.88	2.4741	23 38 38.7	9.953	16	5 41 28.27	2.7984	28 23 16.9	1.261
17	3 36 7.60	2.4833	23 48 31.8	9.817	17	5 44 16.25	2.8008	28 24 26.1	1.046
18	3 38 36.87	2.4924	23 58 16.7	9.678	18	5 47 4.37	2.8031	28 25 22.4	0.831
19	3 41 6.69	2.5015	24 7 53.1	9.536	19	5 49 52.62	2.8051	28 26 5.8	0.615
20	3 43 37.05	2.5105	24 17 21.0	9.392	20	5 52 40.98	2.8068	28 26 36.2	0.399
21	3 46 7.95	2.5195	24 26 40.2	9.247	21	5 55 29.44	2.8084	28 26 53.7	+ 0.183
22	3 48 39.39	2.5285	24 35 50.6	9.099	22	5 58 17.99	2.8097	28 26 58.2	− 0.034
23	3 51 11.37	2.5375	24 44 52.1	8.950	23	6 1 6.61	2.8107	28 26 49.6	0.251
24	3 53 43.89	2.5464	N.24 53 44.6	8.798	24	6 3 55.28	2.8115	N.28 26 28.0	0.468

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

THURSDAY 13.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	6 3 55.28	2.8115	N.28 26 28.0	0.468
1	6 6 43.99	2.8121	28 25 53.4	0.686
2	6 9 32.73	2.8125	28 25 5.7	0.903
3	6 12 21.49	2.8127	28 24 5.0	1.121
4	6 15 10.25	2.8126	28 22 51.2	1.338
5	6 17 58.99	2.8121	28 21 24.4	1.555
6	6 20 47.70	2.8115	28 19 44.6	1.772
7	6 23 36.37	2.8106	28 17 51.8	1.989
8	6 26 24.98	2.8095	28 15 45.9	2.206
9	6 29 13.51	2.8082	28 13 27.0	2.422
10	6 32 1.96	2.8066	28 10 55.2	2.638
11	6 34 50.31	2.8048	28 8 10.4	2.854
12	6 37 38.54	2.8028	28 5 12.7	3.069
13	6 40 26.65	2.8006	28 2 2.1	3.283
14	6 43 14.61	2.7981	27 58 38.7	3.496
15	6 46 2.42	2.7955	27 55 2.5	3.709
16	6 48 50.07	2.7926	27 51 13.6	3.922
17	6 51 37.53	2.7894	27 47 11.9	4.133
18	6 54 24.80	2.7862	27 42 57.6	4.343
19	6 57 11.87	2.7826	27 38 30.7	4.553
20	6 59 58.71	2.7787	27 33 51.3	4.762
21	7 2 45.32	2.7748	27 28 59.3	4.970
22	7 5 31.69	2.7707	27 23 54.9	5.176
23	7 8 17.80	2.7663	N.27 18 38.2	5.381

FRIDAY 14.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	7 11 3.64	2.7618	N.27 13 9.2	5.585
1	7 13 49.21	2.7571	27 7 28.0	5.787
2	7 16 34.49	2.7521	27 1 34.7	5.989
3	7 19 19.46	2.7469	26 55 29.3	6.190
4	7 22 4.12	2.7417	26 49 11.9	6.389
5	7 24 48.47	2.7364	26 42 42.6	6.586
6	7 27 32.49	2.7308	26 36 1.6	6.781
7	7 30 16.17	2.7251	26 29 8.9	6.976
8	7 32 59.50	2.7191	26 22 4.5	7.169
9	7 35 42.46	2.7129	26 14 48.6	7.360
10	7 38 25.05	2.7067	26 7 21.3	7.549
11	7 41 7.27	2.7005	25 59 42.7	7.737
12	7 43 49.11	2.6940	25 51 52.8	7.924
13	7 46 30.55	2.6873	25 43 51.8	8.108
14	7 49 11.59	2.6806	25 35 39.8	8.291
15	7 51 52.22	2.6737	25 27 16.9	8.472
16	7 54 32.43	2.6667	25 18 43.2	8.651
17	7 57 12.22	2.6597	25 9 58.8	8.828
18	7 59 51.59	2.6525	25 1 3.9	9.003
19	8 2 30.52	2.6452	24 51 58.5	9.176
20	8 5 9.01	2.6377	24 42 42.8	9.347
21	8 7 47.05	2.6302	24 33 16.8	9.517
22	8 10 24.64	2.6227	24 23 40.7	9.685
23	8 13 1.77	2.6150	24 13 54.6	9.850
24	8 15 38.44	2.6073	N.24 3 58.7	10.014

SATURDAY 15.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	8 15 38.44	2.6073	N.24 3 58.7	10.014
1	8 18 14.65	2.5996	23 53 53.0	10.175
2	8 20 50.38	2.5916	23 43 37.7	10.333
3	8 23 25.64	2.5837	23 33 13.0	10.490
4	8 26 0.43	2.5757	23 22 38.9	10.645
5	8 28 34.73	2.5677	23 11 55.6	10.798
6	8 31 8.55	2.5596	23 1 3.1	10.949
7	8 33 41.88	2.5515	22 50 1.7	11.098
8	8 36 14.73	2.5434	22 38 51.4	11.244
9	8 38 47.09	2.5352	22 27 32.4	11.388
10	8 41 18.95	2.5269	22 16 4.8	11.531
11	8 43 50.32	2.5187	22 4 28.7	11.671
12	8 46 21.20	2.5105	21 52 44.3	11.808
13	8 48 51.58	2.5022	21 40 51.7	11.944
14	8 51 21.46	2.4939	21 28 51.0	12.077
15	8 53 50.85	2.4856	21 16 42.4	12.208
16	8 56 19.74	2.4773	21 4 26.0	12.337
17	8 58 48.13	2.4691	20 52 1.9	12.465
18	9 1 16.03	2.4608	20 39 30.2	12.590
19	9 3 43.43	2.4525	20 26 51.1	12.712
20	9 6 10.33	2.4442	20 14 4.7	12.832
21	9 8 36.74	2.4360	20 1 11.2	12.950
22	9 11 2.65	2.4278	19 48 10.7	13.066
23	9 13 28.07	2.4196	N.19 35 3.3	13.181

SUNDAY 16.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	9 15 53.00	2.4114	N.19 21 49.0	13.293
1	9 18 17.44	2.4033	19 8 28.1	13.402
2	9 20 41.39	2.3952	18 55 0.8	13.508
3	9 23 4.86	2.3871	18 41 27.1	13.614
4	9 25 27.84	2.3790	18 27 47.1	13.717
5	9 27 50.34	2.3710	18 14 1.1	13.817
6	9 30 12.36	2.3631	18 0 9.1	13.916
7	9 32 33.91	2.3552	17 46 11.2	14.013
8	9 34 54.98	2.3473	17 32 7.6	14.107
9	9 37 15.58	2.3395	17 17 58.4	14.199
10	9 39 35.72	2.3318	17 3 43.7	14.289
11	9 41 55.40	2.3241	16 49 23.7	14.377
12	9 44 14.61	2.3164	16 34 58.4	14.464
13	9 46 33.37	2.3089	16 20 28.0	14.548
14	9 48 51.68	2.3014	16 5 52.6	14.630
15	9 51 9.53	2.2939	15 51 12.4	14.710
16	9 53 26.94	2.2866	15 36 27.4	14.788
17	9 55 43.92	2.2793	15 21 37.8	14.864
18	9 58 0.46	2.2721	15 6 43.7	14.938
19	10 0 16.57	2.2649	14 51 45.2	15.011
20	10 2 32.25	2.2577	14 36 42.4	15.081
21	10 4 47.50	2.2507	14 21 35.5	15.148
22	10 7 2.33	2.2438	14 6 24.6	15.215
23	10 9 16.75	2.2370	13 51 9.7	15.280
24	10 11 30.77	2.2302	N.13 35 51.0	15.342

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

MONDAY 17.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	10 11 30.77	2.2302	N.13 35 51.0	15.342
1	10 13 44.38	2.2235	13 20 28.6	15.402
2	10 15 57.59	2.2169	13 5 2.7	15.461
3	10 18 10.41	2.2104	12 49 33.3	15.518
4	10 20 22.84	2.2040	12 34 0.6	15.573
5	10 22 34.89	2.1977	12 18 24.6	15.626
6	10 24 46.56	2.1914	12 2 45.5	15.677
7	10 26 57.85	2.1852	11 47 3.4	15.727
8	10 29 8.78	2.1792	11 31 18.3	15.775
9	10 31 19.35	2.1732	11 15 30.4	15.821
10	10 33 29.56	2.1673	10 59 39.8	15.865
11	10 35 39.42	2.1615	10 43 46.6	15.907
12	10 37 48.94	2.1558	10 27 51.0	15.947
13	10 39 58.12	2.1502	10 11 53.0	15.987
14	10 42 6.96	2.1446	9 55 52.6	16.025
15	10 44 15.47	2.1392	9 39 50.0	16.060
16	10 46 23.66	2.1338	9 23 45.4	16.094
17	10 48 31.53	2.1286	9 7 38.8	16.127
18	10 50 39.09	2.1234	8 51 30.2	16.158
19	10 52 46.34	2.1184	8 35 19.9	16.186
20	10 54 53.30	2.1135	8 19 7.9	16.214
21	10 56 59.96	2.1086	8 2 54.2	16.241
22	10 59 6.33	2.1038	7 46 39.0	16.265
23	11 1 12.42	2.0992	N. 7 30 22.4	16.287

TUESDAY 18.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	11 3 18.23	2.0946	N. 7 14 4.5	16.308
1	11 5 23.77	2.0902	6 57 45.4	16.328
2	11 7 29.05	2.0858	6 41 25.1	16.347
3	11 9 34.07	2.0816	6 25 3.8	16.363
4	11 11 38.84	2.0774	6 8 41.5	16.379
5	11 13 43.36	2.0733	5 52 18.3	16.392
6	11 15 47.63	2.0693	5 35 54.4	16.404
7	11 17 51.67	2.0655	5 19 29.8	16.415
8	11 19 55.49	2.0617	5 3 4.6	16.425
9	11 21 59.08	2.0580	4 46 38.8	16.433
10	11 24 2.45	2.0544	4 30 12.6	16.440
11	11 26 5.61	2.0510	4 13 46.0	16.445
12	11 28 8.57	2.0477	3 57 19.2	16.448
13	11 30 11.33	2.0444	3 40 52.2	16.451
14	11 32 13.90	2.0411	3 24 25.1	16.452
15	11 34 16.27	2.0380	3 7 57.9	16.452
16	11 36 18.46	2.0351	2 51 30.8	16.450
17	11 38 20.48	2.0323	2 35 3.9	16.447
18	11 40 22.33	2.0295	2 18 37.2	16.443
19	11 42 24.02	2.0268	2 2 10.8	16.438
20	11 44 25.55	2.0242	1 45 44.7	16.431
21	11 46 26.92	2.0216	1 29 19.1	16.422
22	11 48 28.14	2.0193	1 12 54.0	16.413
23	11 50 29.23	2.0171	0 56 29.5	16.402
24	11 52 30.19	2.0149	N. 0 40 5.7	16.391

WEDNESDAY 19.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	11 52 30.19	2.0149	N. 0 40 5.7	16.391
1	11 54 31.02	2.0127	0 23 42.6	16.378
2	11 56 31.72	2.0107	N. 0 7 20.4	16.363
3	11 58 32.30	2.0088	S. 0 9 0.9	16.347
4	12 0 32.77	2.0070	0 25 21.2	16.330
5	12 2 33.14	2.0052	0 41 40.5	16.312
6	12 4 33.40	2.0036	0 57 58.7	16.293
7	12 6 33.57	2.0021	1 14 15.7	16.272
8	12 8 33.65	2.0007	1 30 31.4	16.251
9	12 10 33.65	1.9993	1 46 45.8	16.228
10	12 12 33.57	1.9981	2 2 58.8	16.204
11	12 14 33.42	1.9969	2 19 10.3	16.178
12	12 16 33.20	1.9958	2 35 20.2	16.152
13	12 18 32.92	1.9949	2 51 28.5	16.124
14	12 20 32.59	1.9940	3 7 35.1	16.096
15	12 22 32.20	1.9931	3 23 40.0	16.067
16	12 24 31.76	1.9924	3 39 43.1	16.036
17	12 26 31.29	1.9919	3 55 44.3	16.003
18	12 28 30.79	1.9914	4 11 43.5	15.970
19	12 30 30.26	1.9909	4 27 40.7	15.936
20	12 32 29.70	1.9905	4 43 35.8	15.900
21	12 34 29.12	1.9903	4 59 28.7	15.863
22	12 36 28.53	1.9902	5 15 19.4	15.826
23	12 38 27.94	1.9901	S. 5 31 7.8	15.787

THURSDAY 20.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	12 40 27.34	1.9900	S. 5 46 53.9	15.748
1	12 42 26.74	1.9901	6 2 37.6	15.706
2	12 44 26.15	1.9903	6 18 18.7	15.664
3	12 46 25.58	1.9906	6 33 57.3	15.622
4	12 48 25.02	1.9909	6 49 33.3	15.578
5	12 50 24.49	1.9913	7 5 6.6	15.533
6	12 52 23.98	1.9918	7 20 37.2	15.487
7	12 54 23.50	1.9924	7 36 5.0	15.439
8	12 56 23.06	1.9931	7 51 29.9	15.390
9	12 58 22.67	1.9938	8 6 51.8	15.340
10	13 0 22.32	1.9947	8 22 10.7	15.290
11	13 2 22.03	1.9956	8 37 26.6	15.238
12	13 4 21.79	1.9965	8 52 39.3	15 185
13	13 6 21.61	1.9976	9 7 48.8	15.132
14	13 8 21.50	1.9987	9 22 55.1	15.077
15	13 10 21.46	1.9999	9 37 58.1	15.022
16	13 12 21.49	2.0012	9 52 57.7	14.965
17	13 14 21.60	2.0026	10 7 53.9	14.907
18	13 16 21.80	2.0040	10 22 46.6	14.848
19	13 18 22.08	2.0055	10 37 35.7	14.788
20	13 20 22.46	2.0071	10 52 21.2	14.727
21	13 22 22.93	2.0087	11 7 3.0	14.666
22	13 24 23.50	2.0104	11 21 41.1	14.603
23	13 26 24.18	2.0122	11 36 15.4	14.538
24	13 28 24.97	2.0141	S.11 50 45.7	14.473

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.	Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
FRIDAY 21.					**SUNDAY 23.**				
	h m s	s	° ′ ″	″		h m s	s	° ′ ″	″
0	13 28 24.97	2.0141	S. 11 50 45.7	14.473	0	15 8 16.24	2.1613	S. 21 51 27.2	10.177
1	13 30 25.87	2.0160	12 5 12.1	14.408	1	15 10 26.03	2.1650	22 1 34.4	10.063
2	13 32 26.89	2.0180	12 19 34.6	14.341	2	15 12 36.04	2.1687	22 11 34.7	9.949
3	13 34 28.03	2.0200	12 33 53.0	14.272	3	15 14 46.28	2.1725	22 21 28.2	9.834
4	13 36 29.29	2.0222	12 48 7.2	14.203	4	15 16 56.74	2.1762	22 31 14.8	9.718
5	13 38 30.69	2.0244	13 2 17.3	14.133	5	15 19 7.42	2.1798	22 40 54.4	9.601
6	13 40 32.22	2.0266	13 16 23.2	14.062	6	15 21 18.32	2.1835	22 50 26.9	9.483
7	13 42 33.88	2.0289	13 30 24.8	13.990	7	15 23 29.44	2.1872	22 59 52.3	9.364
8	13 44 35.69	2.0313	13 44 22.0	13.917	8	15 25 40.78	2.1908	23 9 10.6	9.246
9	13 46 37.64	2.0337	13 58 14.8	13.843	9	15 27 52.34	2.1945	23 18 21.8	9.126
10	13 48 39.74	2.0362	14 12 3.1	13.768	10	15 30 4.12	2.1981	23 27 25.7	9.004
11	13 50 41.99	2.0387	14 25 46.9	13.691	11	15 32 16.11	2.2017	23 36 22.3	8.882
12	13 52 44.39	2.0413	14 39 26.0	13.613	12	15 34 28.32	2.2053	23 45 11.6	8.760
13	13 54 46.95	2.0440	14 53 0.4	13.535	13	15 36 40.74	2.2088	23 53 53.5	8.636
14	13 56 49.67	2.0467	15 6 30.2	13.457	14	15 38 53.37	2.2124	24 2 27.9	8.511
15	13 58 52.56	2.0495	15 19 55.2	13.376	15	15 41 6.22	2.2159	24 10 54.8	8.385
16	14 0 55.61	2.0523	15 33 15.3	13.295	16	15 43 19.28	2.2193	24 19 14.1	8.259
17	14 2 58.83	2.0552	15 46 30.6	13.213	17	15 45 32.54	2.2227	24 27 25.9	8.133
18	14 5 2.23	2.0581	15 59 40.9	13.130	18	15 47 46.00	2.2261	24 35 30.1	8.006
19	14 7 5.80	2.0610	16 12 46.2	13.046	19	15 49 59.67	2.2295	24 43 26.6	7.877
20	14 9 9.55	2.0641	16 25 46.4	12.960	20	15 52 13.54	2.2328	24 51 15.3	7.747
21	14 11 13.49	2.0672	16 38 41.4	12.874	21	15 54 27.61	2.2361	24 58 56.2	7.617
22	14 13 17.61	2.0703	16 51 31.2	12.787	22	15 56 41.87	2.2393	25 6 29.3	7.487
23	14 15 21.92	2.0734	S. 17 4 15.8	12.696	23	15 58 56.33	2.2426	S. 25 13 54.6	7.356
SATURDAY 22.					**MONDAY 24.**				
0	14 17 26.42	2.0766	S. 17 16 55.0	12.608	0	16 1 10.98	2.2457	S. 25 21 12.0	7.224
1	14 19 31.11	2.0798	17 29 28.8	12.518	1	16 3 25.82	2.2488	25 28 21.5	7.091
2	14 21 36.00	2.0831	17 41 57.2	12.428	2	16 5 40.84	2.2519	25 35 22.9	6.957
3	14 23 41.08	2.0864	17 54 20.2	12.337	3	16 7 56.04	2.2549	25 42 16.3	6.822
4	14 25 46.36	2.0897	18 6 37.6	12.243	4	16 10 11.42	2.2578	25 49 1.6	6.687
5	14 27 51.84	2.0930	18 18 49.3	12.148	5	16 12 26.98	2.2607	25 55 34.8	6.552
6	14 29 57.52	2.0964	18 30 55.4	12.053	6	16 14 42.71	2.2636	26 2 7.9	6.417
7	14 32 3.41	2.0999	18 42 55.7	11.957	7	16 16 58.61	2.2664	26 8 28.8	6.280
8	14 34 9.51	2.1033	18 54 50.2	11.860	8	16 19 14.67	2.2691	26 14 41.5	6.142
9	14 36 15.81	2.1067	19 6 38.9	11.762	9	16 21 30.90	2.2717	26 20 45.9	6.004
10	14 38 22.32	2.1102	19 18 21.6	11.663	10	16 23 47.28	2.2742	26 26 42.0	5.866
11	14 40 29.04	2.1138	19 29 58.4	11.563	11	16 26 3.81	2.2768	26 32 29.8	5.727
12	14 42 35.98	2.1174	19 41 29.2	11.462	12	16 28 20.50	2.2793	26 38 9.2	5.587
13	14 44 43.13	2.1210	19 52 53.9	11.360	13	16 30 37.33	2.2817	26 43 40.2	5.447
14	14 46 50.50	2.1246	20 4 12.4	11.257	14	16 32 54.30	2.2840	26 49 2.8	5.307
15	14 48 58.08	2.1282	20 15 24.7	11.153	15	16 35 11.41	2.2862	26 54 17.0	5.166
16	14 51 5.88	2.1319	20 26 30.7	11.048	16	16 37 28.65	2.2884	26 59 22.7	5.024
17	14 53 13.90	2.1356	20 37 30.5	10 943	17	16 39 46.02	2.2905	27 4 19.9	4.882
18	14 55 22.15	2.1393	20 48 23.9	10.836	18	16 42 3.51	2.2925	27 9 8.5	4.739
19	14 57 30.62	2.1429	20 59 10.8	10.728	19	16 44 21.12	2.2944	27 13 48.6	4.596
20	14 59 39.30	2.1465	21 9 51.3	10.620	20	16 46 38.84	2.2962	27 18 20.1	4.452
21	15 1 48.20	2.1502	21 20 25.2	10.510	21	16 48 56.67	2.2980	27 22 42.9	4.308
22	15 3 57.32	2.1539	21 30 52.5	10.400	22	16 51 14.60	2.2997	27 26 57.1	4.164
23	15 6 6.67	2.1576	21 41 13.2	10.289	23	16 53 32.63	2.3013	27 31 2.6	4.020
24	15 8 16.24	2.1613	S. 21 51 27.2	10.177	24	16 55 50.76	2.3029	S. 27 34 59.5	3.876

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

TUESDAY 25.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	16 55 50.76	2.3029	S. 27 34 59.5	3.876
1	16 58 8.98	2.3043	27 38 47.7	3.730
2	17 0 27.27	2.3055	27 42 27.1	3.584
3	17 2 45.64	2.3067	27 45 57.8	3.439
4	17 5 4.08	2.3079	27 49 19.8	3.293
5	17 7 22.59	2.3090	27 52 33.0	3.147
6	17 9 41.16	2.3099	27 55 37.4	3.000
7	17 11 59.78	2.3108	27 58 33.0	2.853
8	17 14 18.45	2.3116	28 1 19.8	2.707
9	17 16 37.17	2.3123	28 3 57.8	2.560
10	17 18 55.92	2.3128	28 6 27.0	2.412
11	17 21 14.70	2.3133	28 8 47.3	2.265
12	17 23 33.51	2.3137	28 10 58.8	2.117
13	17 25 52.34	2.3139	28 13 1.4	1.970
14	17 28 11.18	2.3141	28 14 55.2	1.823
15	17 30 30.03	2.3142	28 16 40.2	1.676
16	17 32 48.88	2.3142	28 18 16.3	1.528
17	17 35 7.73	2.3140	28 19 43.5	1.380
18	17 37 26.56	2.3138	28 21 1.9	1.232
19	17 39 45.38	2.3135	28 22 11.4	1.085
20	17 42 4.18	2.3131	28 23 12.1	0.938
21	17 44 22.95	2.3125	28 24 4.0	0.791
22	17 46 41.68	2.3119	28 24 47.0	0.643
23	17 49 0.37	2.3112	S. 28 25 21.2	0.496

WEDNESDAY 26.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	17 51 19.02	2.3104	S. 28 25 46.5	0.348
1	17 53 37.62	2.3094	28 26 3.0	0.202
2	17 55 56.15	2.3083	28 26 10.7	− 0.056
3	17 58 14.61	2.3071	28 26 9.7	+ 0.090
4	18 0 33.00	2.3059	28 25 59.9	0.237
5	18 2 51.32	2.3047	28 25 41.3	0.383
6	18 5 9.56	2.3033	28 25 13.9	0.529
7	18 7 27.71	2.3017	28 24 37.8	0.674
8	18 9 45.76	2.3000	28 23 53.0	0.819
9	18 12 3.71	2.2982	28 22 59.5	0.964
10	18 14 21.55	2.2964	28 21 57.3	1.108
11	18 16 39.28	2.2945	28 20 46.5	1.252
12	18 18 56.89	2.2925	28 19 27.1	1.395
13	18 21 14.38	2.2903	28 17 59.1	1.539
14	18 23 31.73	2.2881	28 16 22.4	1.683
15	18 25 48.95	2.2858	28 14 37.1	1.826
16	18 28 6.03	2.2834	28 12 43.3	1.967
17	18 30 22.96	2.2810	28 10 41.1	2.108
18	18 32 39.75	2.2785	28 8 30.4	2.249
19	18 34 56.38	2.2758	28 6 11.2	2.390
20	18 37 12.84	2.2729	28 3 43.6	2.529
21	18 39 29.13	2.2700	28 1 7.7	2.668
22	18 41 45.24	2.2671	27 58 23.4	2.808
23	18 44 1.18	2.2642	27 55 30.8	2.947
24	18 46 16.94	2.2611	S. 27 52 29.8	3.085

THURSDAY 27.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	18 46 16.94	2.2611	S. 27 52 29.8	3.085
1	18 48 32.51	2.2579	27 49 20.6	3.222
2	18 50 47.88	2.2546	27 46 3.2	3.358
3	18 53 3.06	2.2513	27 42 37.7	3.494
4	18 55 18.04	2.2479	27 39 4.0	3.629
5	18 57 32.81	2.2444	27 35 22.2	3.763
6	18 59 47.37	2.2409	27 31 32.4	3.897
7	19 2 1.72	2.2372	27 27 34.5	4.031
8	19 4 15.84	2.2335	27 23 28.7	4.163
9	19 6 29.74	2.2298	27 19 15.0	4.294
10	19 8 43.42	2.2260	27 14 53.4	4.425
11	19 10 56.86	2.2221	27 10 24.0	4.556
12	19 13 10 07	2.2182	27 5 46.7	4.686
13	19 15 23.04	2.2142	27 1 1.7	4.814
14	19 17 35.77	2.2101	26 56 9.0	4.942
15	19 19 48.25	2.2059	26 51 8.6	5.070
16	19 22 0.48	2.2017	26 46 0.6	5.196
17	19 24 12.46	2.1975	26 40 45.1	5.322
18	19 26 24.18	2.1932	26 35 22.0	5.447
19	19 28 35.65	2.1889	26 29 51.5	5.570
20	19 30 46.85	2.1845	26 24 13.6	5.693
21	19 32 57.79	2.1801	26 18 28.3	5.816
22	19 35 8.46	2.1756	26 12 35.7	5.937
23	19 37 18.86	2.1712	S. 26 6 35.8	6.058

FRIDAY 28.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	19 39 29.00	2.1667	S. 26 0 28.7	6.178
1	19 41 38.86	2.1620	25 54 14.5	6.297
2	19 43 48.44	2.1573	25 47 53.1	6.415
3	19 45 57.74	2.1527	25 41 24.7	6.532
4	19 48 6.76	2.1480	25 34 49.3	6.648
5	19 50 15.50	2.1432	25 28 6.9	6.764
6	19 52 23.95	2.1385	25 21 17.6	6.878
7	19 54 32.12	2.1337	25 14 21.5	6.992
8	19 56 40.00	2.1289	25 7 18.6	7.104
9	19 58 47.59	2.1241	25 0 9.0	7.216
10	20 0 54.90	2.1193	24 52 52.7	7.327
11	20 3 1.91	2.1144	24 45 29.8	7.437
12	20 5 8.63	2.1096	24 38 0.3	7.546
13	20 7 15.06	2.1047	24 30 24.3	7.654
14	20 9 21.19	2.0997	24 22 41.8	7.761
15	20 11 27.03	2.0948	24 14 53.0	7.867
16	20 13 32.57	2.0898	24 6 57.8	7.972
17	20 15 37.81	2.0849	23 58 56.3	8.077
18	20 17 42.76	2.0800	23 50 48.6	8.180
19	20 19 47.41	2.0750	23 42 34.7	8.282
20	20 21 51.76	2.0701	23 34 14.7	8.384
21	20 23 55.82	2.0652	23 25 48.6	8.485
22	20 25 59.58	2.0602	23 17 16.5	8.585
23	20 28 3.04	2.0552	23 8 38.4	8.683
24	20 30 6.21	2.0503	S. 22 59 54.5	8.780

GREENWICH MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

SATURDAY 29.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	20 30 6.21	2.0503	S. 22 59 54.5	8.780
1	20 32 9.08	2.0453	22 51 4.8	8.877
2	20 34 11.65	2.0404	22 42 9.2	8.974
3	20 36 13.93	2.0355	22 33 7.9	9.068
4	20 38 15.91	2.0306	22 24 1.0	9.162
5	20 40 17.60	2.0257	22 14 48.4	9.256
6	20 42 18.99	2.0208	22 5 30.3	9.347
7	20 44 20.09	2.0159	21 56 6.7	9.438
8	20 46 20.90	2.0111	21 46 37.7	9.528
9	20 48 21.42	2.0062	21 37 3.3	9.617
10	20 50 21.65	2.0014	21 27 23.6	9.706
11	20 52 21.59	1.9966	21 17 38.6	9.794
12	20 54 21.24	1.9918	21 7 48.3	9.881
13	20 56 20.61	1.9871	20 57 52.9	9.966
14	20 58 19.69	1.9823	20 47 52.4	10.051
15	21 0 18.49	1.9776	20 37 46.8	10.135
16	21 2 17.00	1.9729	20 27 36.2	10.217
17	21 4 15.24	1.9683	20 17 20.7	10.298
18	21 6 13.20	1.9637	20 7 0.4	10.379
19	21 8 10.88	1.9591	19 56 35.2	10.460
20	21 10 8.29	1.9546	19 46 5.2	10.539
21	21 12 5.43	1.9501	19 35 30.5	10.617
22	21 14 2.30	1.9456	19 24 51.1	10.695
23	21 15 58.90	1.9411	S. 19 14 7.1	10.772

SUNDAY 30.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	21 17 55.23	1.9367	S. 19 3 18.5	10.847
1	21 19 51.30	1.9323	18 52 25.4	10.922
2	21 21 47.11	1.9280	18 41 27.9	10.996
3	21 23 42.66	1.9237	18 30 25.9	11.069
4	21 25 37.95	1.9194	18 19 19.6	11.141
5	21 27 32.99	1.9151	18 8 9.0	11.212
6	21 29 27.77	1.9109	17 56 54.2	11.282
7	21 31 22.30	1.9068	17 45 35.2	11.352
8	21 33 16.59	1.9028	17 34 12.0	11.421
9	21 35 10.64	1.8988	17 22 44.7	11.489
10	21 37 4.45	1.8948	17 11 13.3	11.556
11	21 38 58.02	1.8908	16 59 38.0	11.621
12	21 40 51.35	1.8869	16 47 58.8	11.686
13	21 42 44.45	1.8831	16 36 15.7	11.751
14	21 44 37.32	1.8793	16 24 28.7	11.815
15	21 46 29.97	1.8756	16 12 37.9	11.878
16	21 48 22.39	1.8719	16 0 43.3	11.940
17	21 50 14.59	1.8683	15 48 45.1	12.001
18	21 52 6.58	1.8647	15 36 43.2	12.062
19	21 53 58.35	1.8611	15 24 37.7	12.121
20	21 55 49.91	1.8576	15 12 28.7	12.180
21	21 57 41.27	1.8542	15 0 16.1	12.238
22	21 59 32.42	1.8508	14 48 0.1	12.295
23	22 1 23.37	1.8476	14 35 40.7	12.352
24	22 3 14.13	1.8444	S. 14 23 17.9	12.408

MONDAY 31.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
	h m s	s	° ′ ″	″
0	22 3 14.13	1.8444	S. 14 23 17.9	12.408
1	22 5 4.70	1.8411	14 10 51.8	12.463
2	22 6 55.07	1.8379	13 58 22.4	12.516
3	22 8 45.25	1.8348	13 45 49.8	12.569
4	22 10 35.25	1.8319	13 33 14.1	12.622
5	22 12 25.08	1.8290	13 20 35.2	12.674
6	22 14 14.73	1.8260	13 7 53.2	12.725
7	22 16 4.20	1.8232	12 55 8.2	12.775
8	22 17 53.51	1.8205	12 42 20.2	12.825
9	22 19 42.66	1.8178	12 29 29.2	12.874
10	22 21 31.65	1.8152	12 16 35.3	12.921
11	22 23 20.48	1.8126	12 3 38.6	12.968
12	22 25 9.16	1.8101	11 50 39.1	13.015
13	22 26 57.69	1.8077	11 37 36.8	13.061
14	22 28 46.08	1.8052	11 24 31.8	13.107
15	22 30 34.32	1.8028	11 11 24.0	13.152
16	22 32 22.42	1.8006	10 58 13.6	13.195
17	22 34 10.39	1.7985	10 45 0.6	13.238
18	22 35 58.24	1.7964	10 31 45.1	13.280
19	22 37 45.96	1.7943	10 18 27.0	13.322
20	22 39 33.56	1.7923	10 5 6.5	13.363
21	22 41 21.04	1.7904	9 51 43.5	13.403
22	22 43 8.41	1.7887	9 38 18.1	13.442
23	22 44 55.68	1.7869	S. 9 24 50.4	13.481

TUESDAY, JANUARY 1, 1895.

Hour.	Right Ascension.	Diff. for 1 Minute.	Declination.	Diff. for 1 Minute.
0	22 46 42.84	1.7852	S. 9 11 20.4	13.519

PHASES OF THE MOON.

		d	h	m
☽ First Quarter . .	Dec.	5	0	15.2
○ Full Moon		12	7	45.8
☾ Last Quarter . . .		18	23	15.7
● New Moon		26	14	20.0

		d	h
☾ Apogee	Dec.	2	11.0
☾ Perigee		14	3.0
☾ Apogee		29	23.3

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
1	Sun	W.	46° 40′ 38″	3466	48° 1′ 40″	3471	49° 22′ 37″	3474	50° 43′ 30″	3477
	Fomalhaut	E.	39 10 31	3733	37 54 19	3785	36 39 1	3842	35 24 42	3906
	α Pegasi	E.	60 9 51	3418	58 47 55	3434	57 26 17	3451	56 4 58	3469
	Mars	E.	86 9 58	3101	84 41 49	3105	83 13 46	3110	81 45 49	3114
	α Arietis	E.	100 57 3	3082	99 28 32	3087	98 0 7	3091	96 31 46	3095
2	Sun	W.	57 27 8	3488	58 47 45	3490	60 8 20	3490	61 28 55	3491
	α Pegasi	E.	49 23 41	3573	48 4 37	3598	46 46 0	3624	45 27 52	3654
	Mars	E.	74 27 14	3131	72 59 42	3133	71 32 13	3135	70 4 46	3136
	α Arietis	E.	89 11 1	3108	87 43 1	3109	86 15 2	3110	84 47 5	3112
3	Sun	W.	68 11 51	3486	69 32 31	3484	70 53 13	3480	72 13 59	3478
	Mars	E.	62 47 42	3136	61 20 16	3134	59 52 48	3133	58 25 18	3130
	α Arietis	E.	77 27 28	3110	75 59 30	3108	74 31 30	3106	73 3 28	3104
4	Sun	W.	78 58 54	3454	80 20 10	3446	81 41 34	3439	83 3 6	3432
	α Aquilæ	W.	43 21 19	5249	44 15 4	5124	45 10 23	5011	46 7 10	4903
	Mars	E.	51 6 54	3111	49 38 58	3106	48 10 56	3101	46 42 47	3095
	α Arietis	E.	65 42 23	3086	64 13 56	3081	62 45 23	3075	61 16 43	3070
	Aldebaran	E.	96 43 31	3119	95 15 44	3113	93 47 50	3106	92 19 48	3099
5	Sun	W.	89 53 2	3387	91 15 33	3377	92 38 16	3366	94 1 11	3355
	α Aquilæ	W.	51 10 53	4473	52 15 9	4404	53 20 27	4338	54 26 45	4276
	Mars	E.	39 19 58	3056	37 50 55	3047	36 21 41	3038	34 52 15	3028
	α Arietis	E.	53 51 34	3037	52 22 7	3029	50 52 30	3021	49 22 43	3013
	Aldebaran	E.	84 57 20	3059	83 28 20	3050	81 59 9	3040	80 29 46	3030
	Jupiter	E.	110 16 40	2965	108 45 44	2956	107 14 36	2946	105 43 15	2935
6	Sun	W.	100 59 14	3291	102 23 36	3277	103 48 14	3263	105 13 9	3247
	α Aquilæ	W.	60 11 49	4011	61 23 18	3964	62 35 33	3921	63 48 31	3879
	α Arietis	E.	41 51 14	2970	40 20 24	2962	38 49 21	2954	37 18 13	2946
	Aldebaran	E.	72 59 37	2976	71 28 54	2964	69 57 56	2952	68 26 43	2940
	Jupiter	E.	98 2 53	2874	96 30 1	2862	94 56 53	2848	93 23 27	2835
7	Sun	W.	112 22 18	3168	113 49 5	3151	115 16 13	3133	116 43 42	3117
	α Aquilæ	W.	70 3 32	3693	71 20 26	3662	72 37 54	3630	73 55 56	3598
	Fomalhaut	W.	41 0 30	3371	42 23 20	3320	43 47 8	3273	45 11 51	3229
	Aldebaran	E.	60 46 44	2877	59 13 56	2864	57 40 51	2852	56 7 30	2838
	Jupiter	E.	85 31 40	2760	83 56 19	2744	82 20 38	2729	80 44 36	2712
	Pollux	E.	103 46 22	2787	102 11 37	2771	100 36 31	2754	99 1 3	2738
8	Sun	W.	124 6 23	3028	125 36 1	3009	127 6 2	2991	128 36 26	2973
	α Aquilæ	W.	80 34 5	3463	81 55 11	3438	83 16 44	3415	84 38 44	3393
	Fomalhaut	W.	52 27 48	3038	53 57 14	3004	55 27 22	2972	56 58 10	2941
	Aldebaran	E.	48 16 42	2779	46 41 47	2769	45 6 39	2759	43 31 17	2750
	Jupiter	E.	72 38 54	2629	71 0 38	2611	69 21 58	2594	67 42 55	2577
	Pollux	E.	90 58 11	2652	89 20 27	2635	87 42 20	2617	86 3 48	2599
9	α Aquilæ	W.	91 34 40	3298	92 58 54	3282	94 23 27	3267	95 48 17	3254
	Fomalhaut	W.	64 41 32	2801	66 15 58	2775	67 50 58	2751	69 26 30	2727
	α Pegasi	W.	43 56 59	3082	45 25 31	3031	46 55 5	2985	48 25 37	2940
	Aldebaran	E.	35 32 9	2728	33 56 6	2730	32 20 6	2736	30 44 14	2746

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
1	**Sun**	W.	52° 4′ 20″	3480	53° 25′ 6″	3483	54° 45′ 49″	3485	56° 6′ 30″	3488
	Fomalhaut	E.	34 11 28	3976	32 59 25	4055	31 48 40	4144	30 39 21	4246
	α Pegasi	E.	54 43 59	3488	53 23 21	3506	52 3 4	3527	50 43 10	3550
	Mars	E.	80 17 57	3119	78 50 10	3122	77 22 27	3126	75 54 49	3129
	α Arietis	E.	95 3 30	3098	93 35 18	3101	92 7 9	3104	90 39 4	3105
2	**Sun**	W.	62 49 29	3491	64 10 3	3490	65 30 38	3489	66 51 14	3488
	α Pegasi	E.	44 10 16	3685	42 53 13	3720	41 36 47	3757	40 21 0	3799
	Mars	E.	68 37 20	3137	67 9 55	3138	65 42 31	3138	64 15 7	3137
	α Arietis	E.	83 19 10	3112	81 51 15	3112	80 23 20	3112	78 55 25	3110
3	**Sun**	W.	73 34 48	3473	74 55 42	3470	76 16 40	3464	77 37 44	3459
	Mars	E.	56 57 45	3128	55 30 9	3124	54 2 29	3120	52 34 44	3116
	α Arietis	E.	71 35 23	3101	70 7 15	3097	68 39 2	3094	67 10 45	3090
4	**Sun**	W.	84 24 46	3424	85 46 35	3415	87 8 34	3407	88 30 43	3398
	α Aquilæ	W.	47 5 22	4805	48 4 54	4714	49 5 42	4628	50 7 43	4548
	Mars	E.	45 14 31	3087	43 46 6	3081	42 17 33	3073	40 48 50	3065
	α Arietis	E.	59 47 57	3064	58 19 3	3058	56 50 2	3051	55 20 52	3044
	Aldebaran	E.	90 51 37	3091	89 23 17	3084	87 54 48	3076	86 26 9	3068
5	**Sun**	W.	95 21 19	3343	96 47 41	3331	98 11 17	3318	99 35 8	3305
	α Aquilæ	W.	55 34 0	4217	56 42 10	4161	57 51 13	4108	59 1 7	4059
	Mars	E.	33 22 37	3018	31 52 46	3008	30 22 43	2997	28 52 26	2986
	α Arietis	E.	47 52 46	3005	46 22 39	2996	44 52 21	2988	43 21 53	2979
	Aldebaran	E.	79 0 10	3020	77 30 22	3009	76 0 21	2998	74 30 6	2987
	Jupiter	E.	104 11 40	2994	102 39 51	2912	101 7 47	2900	99 35 28	2887
6	**Sun**	W.	106 38 22	3232	108 3 53	3217	109 29 42	3201	110 55 50	3184
	α Aquilæ	W.	65 2 12	3839	66 16 34	3801	67 31 35	3764	68 47 15	3728
	α Arietis	E.	35 46 53	2939	34 15 23	2932	32 43 45	2927	31 12 0	2922
	Aldebaran	E.	66 55 15	2927	65 23 31	2916	63 51 32	2902	62 19 16	2890
	Jupiter	E.	91 49 44	2820	90 15 42	2805	88 41 21	2790	87 6 40	2775
7	**Sun**	W.	118 11 31	3100	119 39 41	3082	121 8 13	3064	122 37 7	3046
	α Aquilæ	W.	75 14 32	3569	76 33 40	3542	77 53 18	3514	79 13 27	3488
	Fomalhaut	W.	46 37 26	3187	48 3 51	3146	49 31 5	3109	50 59 4	3072
	Aldebaran	E.	54 33 52	2826	52 59 58	2814	51 25 48	2801	49 51 22	2791
	Jupiter	E.	79 8 12	2695	77 31 26	2679	75 54 18	2662	74 16 47	2646
	Pollux	E.	97 25 14	2721	95 49 2	2704	94 12 28	2687	92 35 31	2670
8	**Sun**	W.	130 7 12	2955	131 38 21	2937	133 9 53	2919	134 41 48	2901
	α Aquilæ	W.	86 1 9	3371	87 23 59	3351	88 47 11	3332	90 10 45	3314
	Fomalhaut	W.	58 29 37	2911	60 1 42	2883	61 34 23	2855	63 7 40	2828
	Aldebaran	E.	41 55 44	2743	40 20 1	2736	38 44 9	2732	37 8 11	2729
	Jupiter	E.	66 3 28	2559	64 23 37	2543	62 43 23	2525	61 2 44	2508
	Pollux	E.	84 24 52	2581	82 45 31	2564	81 5 46	2545	79 25 36	2528
9	α Aquilæ	W.	97 13 22	3242	98 38 41	3233	100 4 11	3225	101 29 51	3217
	Fomalhaut	W.	71 2 34	2704	72 39 9	2681	74 16 14	2660	75 53 48	2639
	α Pegasi	W.	49 57 5	2898	51 29 26	2859	53 2 37	2822	54 36 36	2788
	Aldebaran	E.	29 8 35	2762	27 33 17	2785	25 58 29	2815	24 21 20	2855

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
9	JUPITER	E.	59° 21′ 42″	2491	57° 40′ 16″	2474	55° 58′ 26″	2458	54° 16′ 13″	2441
	Pollux	E.	77 45 2	2510	76 4 3	2492	74 22 38	2474	72 40 48	2456
10	Fomalhaut	W.	77 31 50	2618	79 10 20	2599	80 49 16	2580	82 28 38	2562
	α Pegasi	W.	56 11 20	2754	57 46 48	2723	59 22 57	2693	60 59 46	2665
	MARS	W.	24 4 54	2448	25 47 21	2430	27 30 13	2413	29 13 29	2396
	JUPITER	E.	45 39 25	2364	43 54 58	2349	42 10 10	2336	40 25 3	2323
	Pollux	E.	64 5 26	2370	62 21 8	2354	60 36 27	2337	58 51 22	2322
	Regulus	E.	100 52 51	2369	99 8 32	2353	97 23 49	2336	95 38 42	2320
11	Fomalhaut	W.	90 51 20	2485	92 32 55	2471	94 14 49	2459	95 57 0	2448
	α Pegasi	W.	69 12 46	2545	70 52 57	2524	72 33 37	2505	74 14 43	2487
	MARS	W.	37 55 40	2319	39 41 12	2304	41 27 5	2291	43 13 18	2279
	α Arietis	W.	25 43 36	2400	27 27 11	2368	29 11 31	2340	30 56 32	2315
	Pollux	E.	50 0 18	2247	48 13 1	2234	46 25 24	2221	44 37 28	2208
	Regulus	E.	86 47 25	2245	85 0 4	2231	83 12 23	2218	81 24 22	2205
12	α Pegasi	W.	82 46 3	2414	84 29 18	2403	86 12 49	2392	87 56 35	2383
	MARS	W.	52 8 50	2222	53 56 45	2212	55 44 54	2203	57 33 17	2195
	α Arietis	W.	39 49 49	2218	41 37 49	2204	43 26 11	2190	45 14 53	2178
	Regulus	E.	72 19 43	2149	70 29 58	2139	68 39 58	2130	66 49 45	2122
13	MARS	W.	66 37 57	2164	68 27 19	2159	70 16 48	2156	72 6 22	2153
	α Arietis	W.	54 22 28	2132	56 12 38	2126	58 2 58	2120	59 53 26	2116
	Regulus	E.	57 35 52	2090	55 44 38	2086	53 53 18	2083	52 1 52	2079
14	MARS	W.	81 15 2	2148	83 4 48	2149	84 54 33	2151	86 44 15	2153
	α Arietis	W.	69 7 13	2104	70 58 6	2103	72 49 0	2104	74 39 53	2105
	Aldebaran	W.	38 47 19	2243	40 34 42	2232	42 22 22	2222	44 10 17	2214
	Regulus	E.	42 43 52	2075	40 52 14	2075	39 0 37	2077	37 9 3	2081
	Spica	E.	96 43 3	2069	94 51 16	2070	92 59 31	2071	91 7 47	2073
	SATURN	E.	108 0 40	2116	106 10 6	2118	104 19 34	2118	102 29 3	2120
15	MARS	W.	95 51 35	2174	97 40 42	2179	99 29 41	2186	101 18 30	2192
	α Arietis	W.	83 53 26	2122	85 43 51	2128	87 34 8	2134	89 24 16	2139
	Aldebaran	W.	53 11 57	2199	55 0 26	2199	56 48 55	2201	58 37 21	2204
	JUPITER	W.	28 44 29	2129	30 34 44	2125	32 25 5	2124	34 15 27	2125
	Spica	E.	81 50 14	2092	79 59 2	2098	78 7 59	2103	76 17 5	2109
	SATURN	E.	93 17 26	2138	91 27 25	2143	89 37 32	2149	87 47 48	2156
16	Aldebaran	W.	67 38 7	2229	69 25 51	2236	71 13 25	2244	73 0 47	2253
	JUPITER	W.	43 26 20	2146	45 16 9	2153	47 5 48	2160	48 55 16	2168
	Pollux	W.	23 50 38	2165	25 39 58	2172	27 29 7	2180	29 18 4	2188
	Spica	E.	67 5 14	2149	65 15 29	2157	63 25 57	2167	61 36 40	2176
	SATURN	E.	78 41 51	2196	76 53 17	2205	75 4 57	2215	73 16 52	2225
17	Aldebaran	W.	81 54 18	2301	83 40 16	2311	85 25 59	2323	87 11 25	2334
	JUPITER	W.	57 59 23	2214	59 47 30	2225	61 35 21	2235	63 22 56	2246
	Pollux	W.	38 19 28	2237	40 7 0	2248	41 54 16	2259	43 41 16	2270
	Spica	E.	52 34 2	2230	50 46 19	2241	48 58 53	2253	47 11 44	2264
	SATURN	E.	64 20 24	2282	62 33 58	2294	60 47 49	2306	59 1 58	2319
	SUN	E.	115 35 50	2570	113 56 14	2583	112 16 55	2594	110 37 52	2607

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
9	Jupiter	E.	52° 33′ 37″	2425	50° 50′ 38″	2409	49° 7′ 16″	2393	47° 23′ 31″	2378
	Pollux	E.	70 58 33	2438	69 15 53	2422	67 32 49	2404	65 49 20	2387
10	Fomalhaut	W.	84 8 25	2545	85 48 36	2529	87 29 9	2513	89 10 4	2498
	α Pegasi	W.	62 37 13	2638	64 15 16	2612	65 53 54	2589	67 33 4	2566
	Mars	W.	30 57 9	2380	32 41 13	2364	34 25 40	2348	36 10 29	2333
	Jupiter	E.	38 39 37	2311	36 53 54	2300	35 7 54	2289	33 21 39	2281
	Pollux	E.	57 5 54	2306	55 20 3	2291	53 33 50	2276	51 47 15	2261
	Regulus	E.	93 53 12	2304	92 7 19	2289	90 21 3	2274	88 34 25	2259
11	Fomalhaut	W.	97 39 27	2438	99 22 8	2429	101 5 2	2420	102 48 8	2413
	α Pegasi	W.	75 56 15	2470	77 38 10	2454	79 20 28	2440	81 3 6	2426
	Mars	W.	44 59 49	2266	46 46 39	2254	48 33 46	2243	50 21 10	2232
	α Arietis	W.	32 42 10	2292	34 28 21	2271	36 15 3	2252	38 2 13	2235
	Pollux	E.	42 49 13	2197	41 0 41	2185	39 11 51	2174	37 22 45	2165
	Regulus	E.	79 36 2	2192	77 47 23	2181	75 58 27	2169	74 9 13	2159
12	α Pegasi	W.	89 40 34	2375	91 24 44	2368	93 9 4	2364	94 53 31	2359
	Mars	W.	59 21 52	2187	61 10 39	2180	62 59 36	2174	64 48 42	2169
	α Arietis	W.	47 3 53	2167	48 53 10	2157	50 42 43	2148	52 32 29	2139
	Regulus	E.	64 59 20	2115	63 8 43	2107	61 17 55	2101	59 26 58	2096
13	Mars	W.	73 56 1	2151	75 45 43	2149	77 35 28	2147	79 25 15	2147
	α Arietis	W.	61 44 2	2111	63 34 44	2109	65 25 30	2106	67 16 20	2104
	Regulus	E.	50 10 21	2077	48 18 47	2075	46 27 10	2074	44 35 31	2074
14	Mars	W.	88 33 54	2156	90 23 28	2159	92 12 57	2163	94 2 20	2169
	α Arietis	W.	76 30 44	2107	78 21 32	2111	80 12 15	2113	82 2 54	2118
	Aldebaran	W.	45 58 24	2208	47 46 40	2204	49 35 2	2201	51 23 28	2199
	Regulus	E.	35 17 34	2083	33 26 9	2088	31 34 51	2092	29 43 40	2097
	Spica	E.	89 16 7	2076	87 24 31	2079	85 32 59	2083	83 41 33	2087
	Saturn	E.	100 38 35	2122	98 48 10	2126	96 57 50	2129	95 7 35	2133
15	Mars	W.	103 7 9	2200	104 55 36	2208	106 43 52	2216	108 31 55	2225
	α Arietis	W.	91 14 15	2147	93 4 3	2154	94 53 40	2162	96 43 5	2170
	Aldebaran	W.	60 25 43	2207	62 14 0	2212	64 2 10	2216	65 50 13	2223
	Jupiter	W.	36 5 48	2128	37 56 5	2131	39 46 17	2136	41 36 22	2140
	Spica	E.	74 26 20	2116	72 35 46	2124	70 45 23	2132	68 55 12	2140
	Saturn	E.	85 58 14	2163	84 8 50	2170	82 19 38	2178	80 30 38	2187
16	Aldebaran	W.	74 47 56	2262	76 34 52	2270	78 21 35	2280	80 8 4	2290
	Jupiter	W.	50 44 32	2177	52 33 35	2185	54 22 25	2194	56 11 1	2204
	Pollux	W.	31 6 49	2197	32 55 21	2207	34 43 38	2216	36 31 41	2227
	Spica	E.	59 47 37	2187	57 58 50	2197	56 10 18	2208	54 22 2	2218
	Saturn	E.	71 29 2	2236	69 41 28	2247	67 54 10	2258	66 7 8	2270
17	Aldebaran	W.	88 56 35	2346	90 41 27	2358	92 26 2	2371	94 10 19	2383
	Jupiter	W.	65 10 15	2257	66 57 18	2268	68 44 4	2279	70 30 34	2291
	Pollux	W.	45 27 59	2282	47 14 25	2294	49 0 34	2306	50 46 25	2317
	Spica	E.	45 24 52	2277	43 38 18	2288	41 52 1	2300	40 6 2	2313
	Saturn	E.	57 16 26	2332	55 31 13	2345	53 46 19	2359	52 1 45	2373
	Sun	E.	108 59 6	2619	107 20 37	2632	105 42 25	2644	104 4 30	2657

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Noon.	P. L. of Diff.	IIIh.	P. L. of Diff.	VIh.	P. L. of Diff.	IXh.	P. L. of Diff.
18	Jupiter	W.	72° 16′ 46″	2303	74° 2′ 41″	2315	75° 48′ 18″	2327	77° 33′ 38″	2339
	Pollux	W.	52 31 59	2330	54 17 15	2342	56 2 14	2355	57 46 54	2368
	Spica	E.	38 20 21	2325	36 34 58	2337	34 49 53	2350	33 5 6	2362
	Saturn	E.	50 17 31	2387	48 33 37	2401	46 50 4	2416	45 6 52	2431
	Sun	E.	102 26 53	2671	100 49 34	2684	99 12 32	2697	97 35 48	2710
19	Jupiter	W.	86 15 52	2401	87 59 26	2412	89 42 43	2424	91 25 43	2437
	Pollux	W.	66 25 51	2429	68 8 45	2441	69 51 22	2453	71 33 42	2465
	Regulus	W.	29 38 53	2434	31 21 39	2446	33 4 8	2458	34 46 21	2469
	Saturn	E.	36 36 18	2511	34 55 20	2528	33 14 46	2547	31 34 38	2566
	Sun	E.	89 36 35	2778	88 1 38	2791	86 26 58	2805	84 52 36	2818
20	Jupiter	W.	99 56 23	2497	101 37 40	2509	103 18 41	2520	104 59 26	2533
	Pollux	W.	80 1 4	2525	81 41 42	2537	83 22 4	2548	85 2 10	2560
	Regulus	W.	43 13 22	2527	44 53 58	2538	46 34 18	2550	48 14 22	2561
	Antares	E.	56 43 59	2522	55 3 16	2534	53 22 50	2545	51 42 40	2557
	Sun	E.	77 5 5	2883	75 32 25	2897	74 0 2	2909	72 27 55	2922
21	Pollux	W.	93 18 46	2615	94 57 20	2626	96 35 40	2637	98 13 45	2647
	Regulus	W.	56 30 52	2615	58 9 26	2626	59 47 45	2637	61 25 50	2647
	Antares	E.	43 25 44	2612	41 47 6	2623	40 8 42	2634	38 30 33	2644
	Sun	E.	64 51 20	2985	63 20 48	2997	61 50 31	3009	60 20 29	3020
22	Pollux	W.	106 20 44	2697	107 57 28	2707	109 33 59	2716	111 10 17	2725
	Regulus	W.	69 32 51	2697	71 9 35	2706	72 46 7	2715	74 22 27	2725
	Sun	E.	52 53 56	3078	51 25 20	3091	49 56 59	3102	48 28 52	3113
23	Regulus	W.	82 21 4	2769	83 56 13	2778	85 31 10	2786	87 5 56	2794
	Spica	W.	28 19 36	2766	29 54 48	2775	31 29 48	2784	33 4 37	2792
	Sun	E.	41 11 41	3170	39 44 56	3182	38 18 25	3194	36 52 9	3206
24	Regulus	W.	94 57 9	2835	96 30 52	2842	98 4 26	2849	99 37 50	2857
	Spica	W.	40 56 4	2832	42 29 50	2839	44 3 27	2847	45 36 54	2855
	Sun	E.	29 44 30	3272	28 19 46	3287	26 55 19	3304	25 31 12	3321
28	Sun	W.	16 5 48	3624	17 23 56	3602	18 42 28	3584	20 1 20	3570
	α Pegasi	E.	63 23 6	3368	62 0 13	3381	60 37 35	3396	59 15 14	3411
	Mars	E.	96 42 42	3171	95 15 58	3177	93 49 21	3181	92 22 49	3186
	α Arietis	E.	104 27 20	3065	102 58 28	3069	101 29 40	3073	100 0 57	3077
29	Sun	W.	26 38 33	3534	27 58 20	3531	29 18 10	3527	30 38 4	3525
	α Pegasi	E.	52 28 5	3501	51 7 42	3522	49 47 42	3545	48 28 8	3569
	Mars	E.	85 11 26	3205	83 45 23	3209	82 19 24	3211	80 53 28	3214
	α Arietis	E.	92 38 29	3093	91 10 11	3096	89 41 57	3099	88 13 46	3101
30	Sun	W.	37 18 4	3516	38 38 10	3515	39 58 17	3514	41 18 26	3512
	Mars	E.	73 44 35	3225	72 18 55	3225	70 53 16	3226	69 27 38	3227
	α Arietis	E.	80 53 31	3110	79 25 34	3111	77 57 38	3113	76 29 44	3113
31	Sun	W.	47 59 45	3500	49 20 9	3497	50 40 37	3494	52 1 8	3489
	Mars	E.	62 19 32	3225	60 53 52	3224	59 28 11	3222	58 2 28	3220
	α Arietis	E.	69 10 14	3111	67 42 18	3110	66 14 21	3110	64 46 23	3107

GREENWICH MEAN TIME.

LUNAR DISTANCES.

Day of the Month.	Name and Direction of Object.		Midnight.	P. L. of Diff.	XVh.	P. L. of Diff.	XVIIIh.	P. L. of Diff.	XXIh.	P. L. of Diff.
18	JUPITER	W.	79° 18′ 40″	2359	81° 3′ 24″	2364	82° 47′ 51″	2376	84° 32′ 0″	2388
	Pollux	W.	59 31 17	2379	61 15 22	2391	62 59 9	2403	64 42 39	2416
	Spica	E.	31 20 37	2375	29 36 27	2387	27 52 34	2400	26 8 59	2412
	SATURN	E.	43 24 1	2446	41 41 32	2462	39 59 25	2477	38 17 40	2494
	SUN	E.	95 59 22	2724	94 23 14	2737	92 47 23	2750	91 11 50	2764
19	JUPITER	W.	93 8 25	2449	94 50 50	2461	96 32 58	2473	98 14 49	2485
	Pollux	W.	73 15 44	2477	74 57 30	2489	76 38 58	2502	78 20 9	2513
	Regulus	W.	36 28 18	2481	38 9 58	2492	39 51 22	2504	41 32 30	2515
	SATURN	E.	29 54 57	2587	28 15 44	2609	26 37 1	2632	24 58 50	2659
	SUN	E.	83 18 32	2831	81 44 45	2845	80 11 15	2858	78 38 2	2870
20	JUPITER	W.	106 39 54	2544	108 20 6	2556	110 0 2	2566	111 39 43	2578
	Pollux	W.	86 42 0	2572	88 21 34	2583	90 0 53	2593	91 39 57	2604
	Regulus	W.	49 54 10	2572	51 33 43	2583	53 13 1	2594	54 52 4	2605
	Antares	E.	50 2 46	2569	48 23 8	2580	46 43 45	2591	45 4 37	2601
	SUN	E.	70 56 4	2935	69 24 30	2947	67 53 11	2960	66 22 8	2972
21	Pollux	W.	99 51 36	2657	101 29 13	2667	103 6 37	2678	104 43 47	2687
	Regulus	W.	63 3 41	2657	64 41 19	2667	66 18 43	2677	67 55 54	2687
	Antares	E.	36 52 38	2655	35 14 57	2664	33 37 29	2674	32 0 14	2684
	SUN	E.	58 50 41	3032	57 21 8	3044	55 51 50	3056	54 22 46	3067
22	Pollux	W.	112 46 23	2735	114 22 16	2744	115 57 58	2753	117 33 28	2762
	Regulus	W.	75 58 34	2734	77 34 29	2743	79 10 12	2751	80 45 44	2760
	SUN	E.	47 0 58	3124	45 33 18	3136	44 5 52	3148	42 38 40	3158
23	Regulus	W.	88 40 32	2802	90 14 57	2811	91 49 11	2818	93 23 15	2826
	Spica	W.	34 39 16	2800	36 13 44	2808	37 48 1	2816	39 22 8	2825
	SUN	E.	35 26 7	3219	34 0 20	3231	32 34 48	3244	31 9 31	3256
24	Regulus	W.	101 11 4	2865	102 44 8	2872	104 17 3	2879	105 49 49	2887
	Spica	W.	47 10 11	2862	48 43 19	2869	50 16 17	2876	51 49 6	2884
	SUN	E.	24 7 25	3340	22 44 0	3362	21 21 0	3385	19 58 26	3410
28	SUN	W.	21 20 27	3559	22 39 46	3550	23 59 15	3544	25 18 51	3538
	α Pegasi	E.	57 53 10	3428	56 31 25	3444	55 9 58	3462	53 48 51	3480
	MARS	E.	90 56 23	3190	89 30 2	3193	88 3 45	3196	86 37 33	3202
	α Arietis	E.	98 32 19	3080	97 3 45	3084	95 35 16	3087	94 6 51	3090
29	SUN	W.	31 58 0	3524	33 17 58	3522	34 37 58	3520	35 58 0	3518
	α Pegasi	E.	47 9 0	3596	45 50 21	3625	44 32 14	3656	43 14 40	3690
	MARS	E.	79 27 36	3217	78 1 47	3220	76 36 1	3221	75 10 17	3223
	α Arietis	E.	86 45 38	3104	85 17 33	3105	83 49 30	3108	82 21 30	3109
30	SUN	W.	42 38 37	3510	43 58 50	3507	45 19 6	3506	46 39 24	3503
	MARS	E.	68 2 1	3227	66 36 24	3227	65 10 47	3227	63 45 10	3226
	α Arietis	E.	75 1 50	3114	73 33 57	3113	72 6 3	3113	70 38 9	3112
31	SUN	W.	53 21 44	3486	54 42 24	3481	56 3 9	3476	57 24 0	3471
	MARS	E.	56 36 42	3217	55 10 53	3214	53 45 0	3210	52 19 3	3207
	α Arietis	E.	63 18 22	3105	61 50 19	3103	60 22 13	3101	58 54 4	3098

GREENWICH MEAN TIME.

JANUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	17 38 38.43	+15.969	−23 25 10.4	−26.64	22 56.5
2	17 45 3.37	16.108	23 35 16.6	23.87	22 59.0
3	17 51 31.56	16.239	23 44 15.6	21.04	23 1.6
4	17 58 2.79	16.362	23 52 5.7	18.12	23 4.2
5	18 4 36.86	16.477	23 58 45.0	15.14	23 6.9
6	18 11 13.62	+16.585	−24 4 11.8	−12.08	23 9.6
7	18 17 52.90	16.687	24 8 24.5	8.97	23 12.4
8	18 24 34.53	16 781	24 11 21.8	5.80	23 15.2
9	18 31 18.35	16.870	24 13 2.3	− 2.56	23 18.0
10	18 38 4.24	16.953	24 13 24.5	+ 0.72	23 20.9
11	18 44 52.05	+17.031	−24 12 27.4	+ 4.05	23 23.8
12	18 51 41.67	17.102	24 10 10.0	7.42	23 26.7
13	18 58 32.95	17.170	24 6 31.1	10.84	23 29.6
14	19 5 25.78	17.232	24 1 29.6	14.30	23 32.6
15	19 12 20.05	17.289	23 55 4.5	17.80	23 35.6
16	19 19 15.63	+17.342	−23 47 15.0	+21.33	23 38.6
17	19 26 12.42	17.390	23 38 0.2	24.91	23 41.6
18	19 33 10.33	17.434	23 27 19.2	28.52	23 44.7
19	19 40 9.25	17.474	23 15 11.2	32.15	23 47.7
20	19 47 9.07	17.510	23 1 35.6	35.82	23 50.8
21	19 54 9.70	+17.542	−22 46 31.6	+39.52	23 53.9
22	20 1 11.05	17.570	22 29 58.4	43.25	23 57.0
23	20 8 13.01	17.594	22 11 55.6	46.99	
24	20 15 15.51	17.614	21 52 22.7	50.76	0 0.1
25	20 22 18.44	17.630	21 31 18.9	54.55	0 3.2
26	20 29 21.72	+17.642	−21 8 44.1	+58.35	0 6.3
27	20 36 25.23	17.650	20 44 37.9	62.17	0 9.4
28	20 43 28.87	17.653	20 18 59.9	66.00	0 12.6
29	20 50 32.56	17.652	19 51 50.0	69.82	0 15.7
30	20 57 36.18	17.646	19 23 8.3	73.65	0 18.8
31	21 4 39.57	+17.636	−18 52 54.8	+77.48	0 21.9
32	21 11 42.66	+17.619	−18 21 9.7	+81.98	0 25.0

Day of the Month.	1st.	6th.	11th.	16th.	21st	26th.	31st.
Semidiameter . .	2″.5	2″.5	2″.4	2″.4	2″.4	2″.4	2″.4
Hor. Parallax . .	6.8	6.5	6.4	6.3	6.2	6.2	6.3

FEBRUARY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	21 11 42.66	+17.619	−18 21 9.7	+ 81.98	0 25.0
2	21 18 45.20	17.594	17 47 53.8	85.05	0 28.2
3	21 25 47.10	17.562	17 13 7.6	88.79	0 31.3
4	21 32 48.13	17.522	16 36 52.2	92.46	0 34.3
5	21 39 48.08	17.471	15 59 9.0	96.11	0 37.4
6	21 46 46.65	+17.408	−15 19 59.8	+ 99.64	0 40.4
7	21 53 43.54	17.331	14 39 26.9	103.08	0 43.4
8	22 0 38.41	17.238	13 57 33.0	106.38	0 46.4
9	22 7 30.80	17.125	13 14 21.7	109.53	0 49.3
10	22 14 20.23	16.990	12 29 57.0	112.49	0 52.2
11	22 21 6.12	+16.839	−11 44 24.2	+115.90	0 55.1
12	22 27 47.77	16.637	10 57 49.5	117.66	0 57.8
13	22 34 24.40	16.410	10 10 20.0	119.76	1 0.5
14	22 40 55.11	16.149	9 22 4.0	121.50	1 3.1
15	22 47 18.84	15.898	8 33 11.7	122.78	1 5.5
16	22 53 34.40	+15.460	− 7 43 54.4	+123.57	1 7.8
17	22 59 40.46	15.033	6 54 24.8	123.78	1 10.0
18	23 5 35.55	14.544	6 4 57.8	123.36	1 12.0
19	23 11 18.02	13.962	5 15 49.3	122.22	1 13.7
20	23 16 46.10	13.344	4 27 17.4	120.31	1 15.2
21	23 21 57.92	+12.626	− 3 39 41.0	+117.58	1 16.4
22	23 26 51.51	11.825	2 53 20.5	113.97	1 17.4
23	23 31 24.85	10.938	2 8 37.5	109.47	1 18.0
24	23 35 35.88	9.966	1 25 53.4	104.04	1 18.2
25	23 39 22.58	8.912	0 45 31.2	97.66	1 18.0
26	23 42 43.05	+ 7.781	− 0 7 52.9	+ 90.38	1 17.4
27	23 45 35.53	6.581	+ 0 26 39.9	82.21	1 16.3
28	23 47 58.46	5.330	0 57 46.3	73.19	1 14.7
29	23 49 50.51	4.012	1 25 6.7	63.39	1 12.6
30	23 51 10.74	2.671	1 48 23.7	52.91	1 10.0
31	23 51 58.59	+ 1.316	+ 2 7 21.6	+ 41.82	1 6.8
32	23 52 13.97	− 0.032	+ 2 21 47.5	+ 30.27	1 3.1

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Polar Semidiameter . .	2″.5	2″.6	2″.8	3″.1	3″.5
Horizontal Parallax . .	6.5	6.8	7.4	8.2	9.3

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	23 49 50.51	+4.012	+1 25 6.7	+63.39	1 12.6
2	23 51 10.74	2.671	1 48 23.7	52.91	1 10.0
3	23 51 58.59	+1.316	2 7 21.6	41.82	1 6.8
4	23 52 13.97	−0.032	2 21 47.5	30.27	1 3.1
5	23 51 57.26	1.354	2 31 31.8	18.38	0 58.9
6	23 51 9.39	−2.694	+2 36 28.8	+ 6.35	0 54.2
7	23 49 51.91	3.818	2 36 37.0	− 5.65	0 48.9
8	23 48 6.93	4.910	2 31 59.4	17.41	0 43.2
9	23 45 57.21	5.877	2 22 45.0	28.70	0 37.1
10	23 43 25.95	6.697	2 9 7.5	39.28	0 30.7
11	23 40 36.94	−7.355	+1 51 26.9	−48.92	0 24.0
12	23 37 34.30	7.834	1 30 8.1	57.44	0 17.0
13	23 34 22.38	8.127	1 5 40.4	64.63	0 9.9
14	23 31 5.71	8.232	0 38 37.4	70.36	0 2.7 23 55.5
15	23 27 48.70	8.155	+0 9 35.1	74.58	23 48.4
16	23 24 35.63	−7.907	−0 20 50.0	−77.25	23 41.4
17	23 21 30.41	7.503	0 52 0.9	78.41	23 34.6
18	23 18 36.58	6.962	1 23 22.2	78.14	23 28.0
19	23 15 57.16	6.306	1 54 21.0	76.56	23 21.7
20	23 13 34.65	5.557	2 24 28.1	73.86	23 15.7
21	23 11 30.99	−4.738	−2 53 18.3	−70.18	23 10.1
22	23 9 47.60	3.870	3 20 30.1	65.69	23 4.8
23	23 8 25.47	2.971	3 45 46.2	60.56	22 59.8
24	23 7 25.09	2.060	4 8 53.2	54.95	22 55.2
25	23 6 46.60	1.149	4 29 41.3	49.01	22 51.0
26	23 6 29.86	−0.249	−4 48 4.0	−42.85	22 47.1
27	23 6 34.47	+0.629	5 3 57.0	36.56	22 43.6
28	23 6 59.83	1.478	5 17 18.6	30.23	22 40.4
29	23 7 45.17	2.294	5 28 8.1	23.92	22 37.5
30	23 8 49.67	3.075	5 36 27.1	17.68	22 35.0
31	23 10 12.46	+3.818	−5 42 17.8	−11.57	22 32.7
32	23 11 52.63	+4.522	−5 45 43.3	− 5.59	22 30.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . .	4″.1	4″.8	5″.3	5″.5	5″.4	5″.0
Hor. Parallax . .	10.9	12.6	14.0	14.6	14.2	13.2

APRIL.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	23 11 52.63	+ 4.522	−5 45 43.3	− 5.59	22 30.7
2	23 13 49.22	5.187	5 46 47.2	+ 0.25	22 28.9
3	23 16 1.30	5.814	5 45 33.3	5.89	22 27.4
4	23 18 28.00	6.405	5 42 5.9	11.36	22 26.1
5	23 21 8.45	6.961	5 36 29.2	16.66	22 25.1
6	23 24 1.85	+ 7.484	−5 28 47.4	+21.78	22 24.2
7	23 27 7.42	7.975	5 19 4.9	26.73	22 23.5
8	23 30 24.43	8.439	5 7 25.7	31.51	22 23.0
9	23 33 52.25	8.876	4 53 53.7	36.13	22 22.7
10	23 37 30.28	9.289	4 38 32.9	40.59	22 22.5
11	23 41 17.93	+ 9.679	−4 21 27.0	+44.89	22 22.5
12	23 45 14.72	10.050	4 2 39.5	49.05	22 22.7
13	23 49 20.18	10.402	3 42 13.9	53.07	22 23.0
14	23 53 33.89	10.738	3 20 13.3	56.96	22 23.4
15	23 57 55.51	11.062	2 56 41.0	60.72	22 23.9
16	0 2 24.74	+11.372	−2 31 39.9	+64.36	22 24.6
17	0 7 1.30	11.672	2 5 12.8	67.88	22 25.3
18	0 11 44.95	11.964	1 37 22.6	71.28	22 26.2
19	0 16 35.50	12.248	1 8 12.0	74.59	22 27.3
20	0 21 32.81	12.526	0 37 43.3	77.79	22 28.4
21	0 26 36.72	+12.800	−0 5 59.0	+80.88	22 29.6
22	0 31 47.19	13.072	+0 26 58.2	83.87	22 30.9
23	0 37 4.17	13.343	1 1 5.8	86.75	22 32.4
24	0 42 27.64	13.613	1 36 21.5	89.54	22 33.9
25	0 47 57.59	13.883	2 12 42.9	92.22	22 35.6
26	0 53 34.06	+14.157	+2 50 7.5	+94.81	22 37.3
27	0 59 17.16	14.435	3 28 33.0	97.29	22 39.2
28	1 5 6.96	14.716	4 7 56.7	99.66	22 41.2
29	1 11 3.59	15.004	4 48 16.0	101.93	22 43.3
30	1 17 7.20	15.298	5 29 28.0	104.06	22 45.6
31	1 23 17.97	+15.601	+6 11 29.9	+106.06	22 48.0
32	1 29 36.10	+15.912	+6 54 18.7	+107.98	22 50.4

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter. .	4″.6	4″.2	3″.8	3″.5	3″.3	3″.1
Hor. Parallax . .	12.1	11.1	10.2	9.4	8.7	8.1

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	1 23 17.97	+15.601	+ 6 11 29.9	+106.08	22 48.0	1	5 36 25.69	+21.614	+25 15 16.7	+22.49	0 56.8
2	1 29 36.10	15.912	6 54 18.7	107.98	22 50.4	2	5 44 59.91	21.232	25 22 57.6	16.02	1 1.4
3	1 36 1.80	15.231	7 37 51.0	109.71	22 53.0	3	5 53 24.58	20.819	25 28 7.6	9.84	1 5.9
4	1 42 35.31	16.562	8 22 3.0	111.28	22 55.8	4	6 1 38.98	20.377	25 30 52.0	+ 3.90	1 10.2
5	1 49 16.86	16.902	9 6 50.9	112.69	22 58.7	5	6 9 42.48	19.912	25 31 16.9	− 1.78	1 14.3
6	1 56 6.70	+17.253	+ 9 52 10.5	+113.91	23 1.7	6	6 17 34.58	+19.426	+25 29 28.8	− 7.18	1 18.2
7	2 3 5.10	17.615	10 37 57.0	114.92	23 4.9	7	6 25 14.81	18.923	25 25 34.6	12.29	1 22.0
8	2 10 12.32	17.988	11 24 5.1	115.71	23 8.2	8	6 32 42.77	18.405	25 19 41.3	17.10	1 25.5
9	2 17 28.58	18.369	12 10 20.0	116.24	23 11.7	9	6 39 58.14	17.874	25 11 56.1	21.62	1 28.8
10	2 24 54.09	18.758	12 57 2.3	116.48	23 15.3	10	6 47 0.63	17.332	25 2 26.1	25.83	1 31.9
11	2 32 29.03	+19.154	+13 43 37.8	+116.42	23 19.1	11	6 53 50.01	+16.781	+24 51 18.5	−29.75	1 34.8
12	2 40 13.53	19.555	14 30 7.8	116.02	23 23.1	12	7 0 26.05	16.221	24 38 40.3	33.38	1 37.4
13	2 48 7.66	19.956	15 16 23.5	115.24	23 27.2	13	7 6 48.57	15.654	24 24 38.6	36.71	1 39.8
14	2 56 11.39	20.354	16 2 15.5	114.04	23 31.5	14	7 12 57.39	15.080	24 9 20.4	39.75	1 42.0
15	3 4 24.62	20.747	16 47 33.7	112.40	23 36.0	15	7 18 52.34	14.499	23 52 52.6	42.52	1 44.0
16	3 12 47.14	+21.127	+17 32 6.9	+110.29	23 40.6	16	7 24 33.28	+13.912	+23 35 21.7	−45.01	1 45.7
17	3 21 18.58	21.489	18 15 43.9	107.69	23 45.3	17	7 30 0.03	13.317	23 16 54.2	47.23	1 47.2
18	3 29 58.42	21.827	18 58 12.3	104.58	23 50.2	18	7 35 12.43	12.715	22 57 37.0	49.17	1 48.4
19	3 38 46.04	22.135	19 39 19.9	100.96	23 55.2	19	7 40 10.31	12.106	22 37 36.3	50.85	1 49.4
20	3 47 40.63	22.407	20 18 54.2	96.82		20	7 44 53.46	11.489	22 16 58.4	52.26	1 50.2
21	3 56 41.25	+22.636	+20 56 43.0	+ 92.17	0 0.2	21	7 49 21.70	+10.863	+21 55 49.7	−53.42	1 50.7
22	4 5 46.80	22.818	21 32 34.6	87.05	0 5.4	22	7 53 34.81	10.223	21 34 16.4	54.32	1 50.9
23	4 14 56.08	22.947	22 6 18.1	81.50	0 10.6	23	7 57 32.55	9.582	21 12 24.7	54.95	1 51.0
24	4 24 7.79	23.019	22 37 43.6	75.56	0 15.9	24	8 1 14.66	8.925	20 50 20.7	55.33	1 50.8
25	4 33 20.55	23.034	23 6 42.7	69.32	0 21.2	25	8 4 40.86	8.256	20 28 10.9	55.45	1 50.2
26	4 42 32.98	+22.991	+23 33 8.8	+ 62.82	0 26.4	26	8 7 50.86	+ 7.575	+20 6 1.4	−55.31	1 49.4
27	4 51 43.68	22.890	23 56 56.5	56.13	0 31.7	27	8 10 44.37	6.881	19 43 58.0	54.92	1 48.3
28	5 0 51.26	22.733	24 18 2.4	49.35	0 36.9	28	8 13 21.04	6.173	19 22 7.6	54.25	1 47.0
29	5 9 54.44	22.523	24 36 24.9	42.52	0 42.1	29	8 15 40.55	5.450	19 0 36.3	53.31	1 45.3
30	5 18 51.98	22.264	24 52 3.6	35.72	0 47.1	30	8 17 42.55	4.714	18 39 30.8	52.11	1 43.4
31	5 27 42.74	+21.959	+25 5 0.0	+ 29.00	0 52.0	31	8 19 26.72	+ 3.964	+18 18 57.3	−50.64	1 41.2
32	5 36 25.69	+21.614	+25 15 16.7	+ 22.49	0 56.8	32	8 20 52.73	+ 3.201	+17 59 2.5	−48.88	1 38.6

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.	Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	2″.9	2″.7	2″.6	2″.5	2″.5	2″.6	2″.7	Semidiameter . .	2″.9	3″.2	3″.5	3″.8	4″.2	4″.7
Hor. Parallax . .	7.6	7.2	6.9	6.7	6.7	6.9	7.2	Hor. Parallax . .	7.7	8.4	9.2	10.1	11.2	12.3

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	8 19 26.72	+3.964	+18 18 57.3	−50.64	1 41.2	1	7 39 25.85	+ 1.493	+18 2 30.5	+33.76	22 56.1
2	8 20 52.73	3.201	17 59 2.5	48.88	1 38.6	2	7 40 15.31	2.634	18 15 45.9	32.44	22 53.4
3	8 22 0.28	2.427	17 39 53.0	46.86	1 35.8	3	7 41 32.32	3.788	18 28 24.2	30.67	22 51.2
4	8 22 49.14	1.643	17 21 35.2	44.57	1 32.7	4	7 43 17.22	4.954	18 40 14.5	28.45	22 49.5
5	8 23 19.07	0.851	17 4 16.0	42.00	1 29.2	5	7 45 30.12	6.120	18 51 6.0	25.77	22 48.2
6	8 23 29.97	+0.057	+16 48 1.5	−39.16	1 25.5	6	7 48 10.93	+ 7.280	+19 0 47.7	+22.62	22 47.4
7	8 23 21.83	−0.735	16 32 58.3	36.06	1 21.4	7	7 51 19.43	8.425	19 9 8.3	19.02	22 47.0
8	8 22 54.72	1.520	16 19 12.6	32.72	1 17.0	8	7 54 55.17	9.549	19 15 57.0	14.96	22 47.1
9	8 22 8.89	2.295	16 6 49.9	29.13	1 12.3	9	7 58 57.55	10.644	19 21 2.9	10.45	22 47.6
10	8 21 4.75	3.045	15 55 55.9	25.34	1 7.3	10	8 3 25.81	11.705	19 24 15.3	5.51	22 48.5
11	8 19 42.98	−3.764	+15 46 35.1	−21.36	1 2.0	11	8 8 19.02	+12.722	+19 25 23.8	+ 0.13	22 49.8
12	8 18 4.39	4.443	15 38 51.9	17.22	0 56.4	12	8 13 36.06	13.688	19 24 18.6	− 5.62	22 51.5
13	8 16 10.10	5.072	15 32 49.6	12.96	0 50.4	13	8 19 15.58	14.595	19 20 51.0	11.74	22 53.6
14	8 14 1.46	5.636	15 28 30.6	8.62	0 44.5	14	8 25 16.13	15.439	19 14 52.8	18.16	22 56.0
15	8 11 40.17	6.126	15 25 56.3	− 4.24	0 38.2	15	8 31 36.08	16.212	19 6 17.6	24.81	22 58.6
16	8 9 8.08	−6.533	+15 25 7.2	+ 0.13	0 31.7	16	8 38 13.66	+16.906	+18 55 0.4	−31.65	23 1.6
17	8 6 27.38	6.840	15 26 2.1	4.43	0 25.1	17	8 45 6.93	17.518	18 40 57.7	38.58	23 4.8
18	8 3 40.60	7.040	15 28 38.9	8.61	0 18.4	18	8 52 13.87	18.045	18 24 8.3	45.54	23 8.2
19	8 0 50.33	7.130	15 32 54.1	12.62	0 11.7	19	8 59 32.41	18.485	18 4 32.4	52.43	23 11.7
20	7 57 59.32	7.100	15 38 43.1	16.42	0 5.0 23 58.3	20	9 7 0.46	18.838	17 42 12.6	59.18	23 15.3
21	7 55 10.50	−6.947	+15 45 59.9	+19.94	23 51.6	21	9 14 35.97	+19.107	+17 17 13.6	−65.69	23 19.1
22	7 52 26.86	6.670	15 54 37.9	23.16	23 45.1	22	9 22 16.95	19.294	16 49 41.6	71.92	23 22.9
23	7 49 51.30	6.273	16 4 29.3	26.05	23 38.8	23	9 30 1.49	19.407	16 19 43.9	77.82	23 26.7
24	7 47 26.69	5.758	16 15 25.6	28.58	23 32.7	24	9 37 47.92	19.450	15 47 29.6	83.32	23 30.5
25	7 45 15.77	5.134	16 27 17.8	30.71	23 26.8	25	9 45 34.62	19.432	15 13 8.5	88.38	23 34.4
26	7 43 21.07	−4.408	+16 39 56.3	+32.43	23 21.3	26	9 53 20.24	+19.361	+14 36 51.1	−93.01	23 38.2
27	7 41 44.92	3.590	16 53 11.0	33.74	23 16.1	27	10 1 3.58	19.244	13 58 47.8	97.19	23 41.9
28	7 40 29.41	2.691	17 6 52.2	34.62	23 11.3	28	10 8 43.67	19.090	13 19 9.6	100.92	23 45.6
29	7 39 36.33	1.721	17 20 49.2	35.06	23 6.8	29	10 16 19.66	18.905	12 38 6.9	104.22	23 49.2
30	7 39 7.26	−0.694	17 34 51.6	35.06	23 2.8	30	10 23 50.91	18.696	11 55 50.1	107.11	23 52.7
31	7 39 3.43	+0.381	+17 48 48.8	+34.63	22 59.3	31	10 31 16.95	+18.470	+11 12 28.8	−109.60	23 56.1
32	7 39 25.85	+1.493	+18 2 30.5	+33.76	22 56.1	32	10 38 37.39	+18.232	+10 28 12.2	−111.72	23 59.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	5″.1	5″.5	5″.8	5″.7	5″.4	4″.9	Semidiameter	4″.3	3″.7	3″.2	2″.9	2″.7	2″.5
Hor. Parallax . .	13.5	14.6	15.2	15.2	14.4	13.0	Hor. Parallax	11.3	9.8	8.6	7.6	7.0	6.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	10 38 37.39	+18.232	+10 28 12 2	−111.72	23 59.4	1	13 41 41.73	+13.289	−11 47 54.1	−94.56	1 0.9
2	10 45 52.02	17.986	9 43 9.0	113.49		2	13 46 59.59	13.199	12 25 21.4	92.71	1 2.3
3	10 53 0.68	17.735	8 57 27.2	114.94	0 2.6	3	13 52 15.27	13.108	13 2 3.6	90.79	1 3.6
4	11 0 3.32	17.485	8 11 14.0	116.11	0 5.7	4	13 57 28.74	13.014	13 37 58.9	88.81	1 4.9
5	11 6 59.96	17.235	7 24 36.0	117.01	0 8.7	5	14 2 39.89	12.915	14 13 5.8	86.76	1 6.1
6	11 13 50.65	+16.990	+ 6 37 39.5	−117.67	0 11.6	6	14 7 48.61	+12.811	−14 47 22.7	−84.63	1 7.3
7	11 20 35.53	16.751	5 50 29.8	118.10	0 14.4	7	14 12 54.75	12.700	15 20 47.6	82.43	1 8.5
8	11 27 14.74	16.518	5 3 12.2	118.34	0 17.1	8	14 17 58.13	12.580	15 53 18.6	80.14	1 9.6
9	11 33 48.45	16.293	4 15 51.0	118.40	0 19.7	9	14 22 58.50	12.449	16 24 53.7	77.77	1 10.7
10	11 40 16.86	16.076	3 28 30.5	118.29	0 22.3	10	14 27 55.60	12.306	16 55 30.7	75.30	1 11.7
11	11 46 40.18	+15.868	+ 2 41 14.1	−118 04	0 24.7	11	14 32 49.09	+12.149	−17 25 7.5	−72.74	1 12.6
12	11 52 58.62	15.670	1 54 5.5	117.65	0 27.1	12	14 37 38.60	11.974	17 53 41.4	70.07	1 13.5
13	11 59 12.40	15.480	1 7 7.7	117.15	0 29.4	13	14 42 23.69	11.779	18 21 9.9	67.28	1 14.3
14	12 5 21.75	15.300	+ 0 20 23.3	116.53	0 31.6	14	14 47 3.80	11.560	18 47 30.1	64.38	1 15.0
15	12 11 26.88	15.129	− 0 26 4.9	115.81	0 33.8	15	14 51 38.36	11.315	19 12 38.8	61.33	1 15.7
16	12 17 28.01	+14.966	− 1 12 14.8	−115.00	0 35.8	16	14 56 6.70	+11.041	−19 36 32.7	−58.14	1 16.2
17	12 23 25.34	14.812	1 58 4.2	114.10	0 37.8	17	15 0 28.03	10.732	19 59 8.2	54.82	1 16.6
18	12 29 19.07	14.666	2 43 31.0	113.12	0 39.8	18	15 4 41.43	10.381	20 20 21.3	51.27	1 16.9
19	12 35 9.39	14.529	3 28 33.7	112.07	0 41.7	19	15 8 45.90	9.985	20 40 7.5	47.55	1 17.0
20	12 40 56.51	14.398	4 13 9.8	110.94	0 43.5	20	15 12 40.30	9.539	20 58 21.9	43.62	1 16.9
21	12 46 40.56	+14.275	− 4 57 18.3	−109.76	0 45.3	21	15 16 23.33	+ 9.036	−21 14 59.1	−39.45	1 16.6
22	12 52 21.75	14.158	5 40 57 6	108.51	0 47.1	22	15 19 53.53	8.470	21 29 53.3	35.02	1 16.2
23	12 58 0.19	14.046	6 24 6.1	107.19	0 48.8	23	15 23 9.30	7.832	21 42 57.8	30.30	1 15.6
24	13 3 36.01	13.940	7 6 42.3	105.82	0 50.4	24	15 26 8.82	7.115	21 54 5.0	25.24	1 14.6
25	13 9 9.34	13.838	7 48 44.9	104.38	0 52.0	25	15 28 50.10	6.312	22 3 6.6	19.82	1 13.3
26	13 14 40.29	+13.739	− 8 30 12.3	−102.89	0 53.6	26	15 31 11.02	+ 5.415	−22 9 53.4	−14.00	1 11.6
27	13 20 8.95	13.647	9 11 3.2	101.34	0 55.1	27	15 33 9.21	4.417	22 14 15.1	7.73	1 9.7
28	13 25 35.37	13.555	9 51 16.3	99.74	0 56.6	28	15 34 42.21	3.315	22 16 0.5	− 0.97	1 7.3
29	13 30 59.62	13.466	10 30 50.1	98.07	0 58.1	29	15 35 47.45	2.104	22 14 57.2	+ 6.34	1 4.4
30	13 36 21.74	13.377	11 9 43.2	96.34	0 59.6	30	15 36 22.34	+ 0.786	22 10 51.6	14.22	1 1.1
31	13 41 41.73	+13.289	−11 47 54.1	− 94.56	1 0.9	31	15 36 24.38	− 0.632	−22 3 29.9	+22.69	0 57.2
32	13 46 59.59	+13.199	−12 25 21.4	− 92.71	1 2.3	32	15 35 51.31	− 2.137	−21 52 38.0	+31.73	0 52.6

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . .	2″.4	2″.4	2″.4	2″.4	2″.5	2″.6	Semidiameter . .	2″.7	2″.8	3″.0	3″.3	3″.6	4″.0
Hor. Parallax . .	6.5	6.4	6 4	6.5	6.6	6.8	Hor. Parallax . .	7.1	7.5	8.0	8.6	9.5	10.7

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	15 35 51.31	− 2.137	−21 52 38.0	+ 31.73	0 52.6
2	15 34 41.29	3.707	21 38 2.6	41.31	0 47.5
3	15 32 53.15	5.308	21 19 31.9	51.31	0 41.8
4	15 30 26.66	6.894	20 56 58.2	61.53	0 35.4
5	15 27 22.81	8.411	20 30 19.2	71.68	0 28.4
6	15 23 44.15	− 9.785	−19 59 41.1	+ 81.38	0 20.8
7	15 19 34.85	10.950	19 25 20.7	90.12	0 12.8
8	15 15 0.92	11.897	18 47 47.4	97.33	0 4.4 23 55.6
9	15 10 9.92	12.358	18 7 45.6	102.44	23 46.7
10	15 5 10.86	12.495	17 26 10.8	104.96	23 37.8
11	15 0 13.39	−12.222	−16 44 10.8	+104.51	23 29.2
12	14 55 27.37	11.545	16 2 58.8	100.97	23 20.9
13	14 51 2.07	10.505	15 23 47.8	94.44	23 13.0
14	14 47 5.56	9.159	14 47 46.3	85.98	23 5.7
15	14 43 44.27	7.583	14 15 50.7	74.05	22 59.1
16	14 41 2.80	− 5.855	−13 48 43.9	+61.33	22 53.2
17	14 39 3.86	4.052	13 26 53.6	47.80	22 48.0
18	14 37 48.42	2.239	13 10 31.5	34.06	22 43.5
19	14 37 16.05	− 0.470	12 59 36.8	20.58	22 39.6
20	14 37 25.22	+ 1.217	12 53 58.2	+ 7.77	22 36.5
21	14 38 13.59	+ 2.793	−12 53 16.3	− 4.10	22 33.9
22	14 39 38.32	4.246	12 57 6.3	14.88	22 31.9
23	14 41 36.34	5.569	13 5 1.0	24.47	22 30.4
24	14 44 4.50	6.760	13 16 31.4	32.87	22 29.4
25	14 46 59.77	7.896	13 31 9.5	40.12	22 28.7
26	14 50 19.20	+ 8.775	−13 48 28.2	−46.27	22 28.5
27	14 54 0.13	9.618	14 8 2.1	51.39	22 28.5
28	14 58 0.10	10.364	14 29 27.6	55.59	22 28.8
29	15 2 16.93	11.025	14 52 23.9	58.96	22 29.6
30	15 6 48.68	11.609	15 16 31.7	61.58	22 30.2
31	15 11 33.64	+12.127	−15 41 34.2	−63.53	22 31.2
32	15 16 30.32	+12.587	−16 7 16.4	−64.89	22 32.3

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Semidiameter . . .	4″.5	4″.9	4″.9	4″.4	3″.8	3″.3
Hor. Parallax . . .	11.9	12.9	12.9	11.7	10.1	8.8

DECEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m
1	15 11 33.64	+12.127	−15 41 34.2	−63.53	22 31.2
2	15 16 30.32	12.587	16 7 16.4	64.89	22 32.3
3	15 21 37.39	12.995	16 33 24.9	65.74	22 33.7
4	15 26 53.74	13.361	16 59 48.2	66.13	22 35.2
5	15 32 18.41	13.689	17 26 15.9	66.12	22 36.8
6	15 37 50.56	+13.985	−17 52 39.0	−65.75	22 38.6
7	15 43 29.45	14.252	18 18 49.4	65.07	22 40.4
8	15 49 14.48	14.496	18 44 40.3	64.12	22 42.3
9	15 55 5.10	14.719	19 10 5.4	62.93	22 44.2
10	16 1 0.85	14.925	19 34 59.3	61.53	22 46.2
11	16 7 1.36	+15.115	−19 59 17.1	−59.92	22 48.3
12	16 13 6.29	15.292	20 22 54.2	58.14	22 50.5
13	16 19 15.31	15.458	20 45 46.8	56.22	22 52.8
14	16 25 28.19	15.614	21 7 51.7	54.16	22 55.1
15	16 31 44.70	15.761	21 29 5.5	51.96	22 57.5
16	16 38 4.64	+15.900	−21 49 25.0	−49.65	23 0.0
17	16 44 27.83	16.032	22 8 47.7	47.23	23 2.5
18	16 50 54.13	16.158	22 27 11.3	44.72	23 5.0
19	16 57 23.40	16.279	22 44 33.3	42.11	23 7.6
20	17 3 55.50	16.395	23 0 51.7	39.49	23 10.2
21	17 10 30.31	+16.505	−23 16 4.6	−36.64	23 12.9
22	17 17 7.73	16.612	23 30 9.7	33.79	23 15.7
23	17 23 47.64	16.713	23 43 5.9	30.87	23 18.4
24	17 30 29.94	16.811	23 54 51.1	27.88	23 21.1
25	17 37 14.54	16.905	24 5 23.7	24.83	23 24.1
26	17 44 1.34	+16.995	−24 14 42.3	−21.71	23 27.0
27	17 50 50.24	17.080	24 22 45.4	18.53	23 29.9
28	17 57 41.13	17.160	24 29 31.4	15.30	23 32.8
29	18 4 33.91	17.238	24 34 59.3	12.02	23 35.8
30	18 11 28.51	17.312	24 39 7.7	8.67	23 38.8
31	18 18 24.84	+17.381	−24 41 55.1	− 5.28	23 41.8
32	18 25 22.77	+17.446	−24 43 20.6	− 1.84	23 44.8

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . .	3″.0	2″.8	2″.6	2″.5	2″.4	2″.4	2″.3
Hor. Parallax . .	7.9	7.3	6.9	6.6	6.4	6.2	6.2

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	21 50 31.26	+6.596	−13 18 1.4	+56.63	3 5.9	1	22 18 35.91	−3.133	−4 4 52.8	+18.58	1 31.5
2	21 53 7.09	6.388	12 55 23.0	56.57	3 4.5	2	22 17 16.34	3.496	3 57 58.8	15.90	1 26.2
3	21 55 37.87	6.175	12 32 46.6	56.46	3 3.1	3	22 15 48.23	3.845	3 52 9.9	13.16	1 20.8
4	21 58 3.45	5.955	12 10 13.9	56.28	3 1.5	4	22 14 11.90	4.180	3 47 27.4	10.37	1 15.3
5	22 0 23.68	5.730	11 47 45.7	56.05	2 59.9	5	22 12 27.71	4.498	3 43 52.6	7.53	1 9.7
6	22 2 38.43	+5.496	−11 25 24.1	+55.75	2 58.2	6	22 10 36.10	−4.796	−3 41 26.1	+ 4.66	1 3.9
7	22 4 47.52	5.258	11 3 10.2	55.39	2 56.4	7	22 8 37.62	5.071	3 40 8.7	+ 1.78	0 58.0
8	22 6 50.76	5.011	10 41 5.9	54.96	2 54.5	8	22 6 32.86	5.318	3 40 0.5	− 1.09	0 52.0
9	22 8 47.99	4.756	10 19 12.6	54.45	2 52.5	9	22 4 22.49	5.538	3 41 0.7	3.92	0 45.9
10	22 10 39.00	4.493	9 57 32.3	53.88	2 50.4	10	22 2 7.23	5.725	3 43 8.5	6.72	0 39.8
11	22 12 23.61	+4.222	− 9 36 6.6	+53.23	2 48.2	11	21 59 47.88	−5.879	−3 46 23.1	− 9.46	0 33.6
12	22 14 1.60	3.942	9 14 57.5	52.51	2 45.9	12	21 57 25.25	5.998	3 50 42.2	12.12	0 27.2
13	22 15 32.78	3.653	8 54 6.7	51.70	2 43.5	13	21 55 0.23	6.078	3 56 3.8	14.65	0 20.9
14	22 16 56.92	3.356	8 33 36.4	50.81	2 41.0	14	21 52 33.78	6.117	4 2 24.8	17.06	0 14.5
15	22 18 13.82	3.049	8 13 28.3	49.83	2 38.3	15	21 50 6.88	6.116	4 9 41.8	19.32	0 8.2
16	22 19 23.25	+2.734	− 7 53 44.9	+48.77	2 35.5	16	21 47 40.49	−6.074	−4 17 51.4	−21.42	0 1.8 23 55.5
17	22 20 25.01	2.410	7 34 28.0	47.61	2 32.6	17	21 45 15.58	5.992	4 26 49.1	23.34	23 49.2
18	22 21 18.88	2.077	7 15 40.2	46.36	2 29.6	18	21 42 53.12	5.871	4 36 30.3	25.06	23 43.0
19	22 22 4.67	1.735	6 57 23.3	45.02	2 26.4	19	21 40 34.04	5.711	4 46 50.5	26.58	23 36.8
20	22 22 42.16	1.386	6 39 39.9	43.58	2 23.1	20	21 38 19.22	5.514	4 57 44.9	27.88	23 30.7
21	22 23 11.17	+1.029	− 6 22 32.2	+42.04	2 19.6	21	21 36 9.58	−5.282	−5 9 7.8	−28.98	23 24.7
22	22 23 31.52	0.666	6 6 2.3	40.40	2 16.0	22	21 34 5.87	5.018	5 20 54.5	29.85	23 18.8
23	22 23 43.08	+0.295	5 50 13.5	38.66	2 12.2	23	21 32 8.84	4.726	5 32 59.6	30.52	23 13.1
24	22 23 45.69	−0.080	5 35 7.5	36.82	2 8.3	24	21 30 19.17	4.407	5 45 18.2	30.98	23 7.5
25	22 23 39.23	0.461	5 20 46.8	34.87	2 4.2	25	21 28 37.43	4.066	5 57 45.3	31.23	23 2.0
26	22 23 23.60	−0.844	− 5 7 14.1	+32.83	2 0.0	26	21 27 4.13	−3.705	−6 10 16.1	−31.29	22 56.7
27	22 22 58.71	1.230	4 54 31.5	30.69	1 55.6	27	21 25 39.69	3.328	6 22 46.1	31.18	22 51.5
28	22 22 24.53	1.617	4 42 41.5	28.45	1 51.1	28	21 24 24.45	2.939	6 35 11.4	30.90	22 46.5
29	22 21 41.10	2.003	4 31 46.4	26.12	1 46.4	29	21 23 18.67	2.540	6 47 28.1	30.45	22 41.6
30	22 20 48.45	2.385	4 21 48.5	23.69	1 41.6	30	21 22 22.56	2.135	6 59 32.2	29.86	22 36.9
31	22 19 46.67	−2.763	− 4 12 49.9	+21.17	1 36.6	31	21 21 36.24	−1.725	−7 11 20.5	−29.14	22 32.4
32	22 18 35.91	−3.133	− 4 4 52.8	+18.58	1 31.5	32	21 20 59.79	−1.314	−7 22 50.0	−28.29	22 28.1

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	17″.7	19″.1	20″.7	22″.4	24″.2	26″.1	28″.0
Hor. Parallax . .	18.4	19.8	21.4	23.2	25.1	27.1	29.0

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	29″.6	30″.8	31″.2	30″.8	29″.7
Hor. Parallax	30.7	31.9	32.3	31.9	30.7

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.						APRIL.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	21 23 18.67	−2.540	−6 47 28.1	−30.45	22 41.6	1	22 0 1.39	+7.001	−9 2 6.3	+12.93	21 19.8
2	21 22 22.56	2.135	6 59 32.2	29.86	22 36.9	2	22 2 51.33	7.158	8 56 37.8	14.43	21 18.7
3	21 21 36.24	1.725	7 11 20.5	29.14	22 32.4	3	22 5 44.92	7.306	8 50 33.6	15.91	21 17.7
4	21 20 59.79	1.314	7 22 50.0	28.29	22 28.1	4	22 8 41.98	7.447	8 43 54.2	17.37	21 16.8
5	21 20 33.21	0.902	7 33 58.2	27.35	22 23.9	5	22 11 42.35	7.581	8 36 40.0	18.81	21 15.9
6	21 20 16.50	−0.493	−7 44 42.3	−26.31	22 19.8	6	22 14 45.85	+7.709	−8 28 51.6	+20.22	21 15.0
7	21 20 9.57	−0.087	7 55 0.5	25.18	22 15.9	7	22 17 52.35	7.831	8 20 29.6	21.61	21 14.2
8	21 20 12.30	+0.312	8 4 50.6	23.96	22 12.1	8	22 21 1.69	7.946	8 11 34.5	22.96	21 13.5
9	21 20 24.52	0.705	8 14 11.0	22.71	22 8.5	9	22 24 13.71	8.055	8 2 6.9	24.32	21 12.8
10	21 20 46.08	1.089	8 23 0.2	21.38	22 5.0	10	22 27 28.29	8.158	7 52 7.4	25.64	21 12.1
11	21 21 16.77	+1.466	−8 31 16.9	−20.00	22 1.7	11	22 30 45.28	+8.256	−7 41 36.4	+26.94	21 11.4
12	21 21 56.39	1.833	8 38 59.8	18.58	21 58.5	12	22 34 4.57	8.350	7 30 34.5	28.21	21 10.8
13	21 22 44.70	2.191	8 46 8.1	17.11	21 55.5	13	22 37 26.06	8.440	7 19 2.4	29.46	21 10.2
14	21 23 41.48	2.538	8 52 40.7	15.61	21 52.7	14	22 40 49.65	8.525	7 7 0.6	30.69	21 9.7
15	21 24 46.47	2.876	8 58 37.0	14.08	21 50.0	15	22 44 15.23	8.606	6 54 29.5	31.90	21 9.2
16	21 25 59.43	+3.202	−9 3 56.3	−12.52	21 47.4	16	22 47 42.71	+8.683	−6 41 29.8	+33.08	21 8.7
17	21 27 20.10	3.518	9 8 38.1	10.95	21 44.9	17	22 51 12.01	8.757	6 28 2.0	34.23	21 8.3
18	21 28 48.21	3.822	9 12 42.0	9.37	21 42.5	18	22 54 43.04	8.828	6 14 6.8	35.36	21 7.9
19	21 30 23.50	4.116	9 16 7.7	7.77	21 40.3	19	22 58 15.72	8.895	5 59 44.7	36.47	21 7.5
20	21 32 5.72	4.399	9 18 54.6	6.16	21 38.2	20	23 1 49.98	8.959	5 44 56.3	37.55	21 7.2
21	21 33 54.61	+4.672	−9 21 2.8	− 4.53	21 36.1	21	23 5 25.75	+9.020	−5 29 42.3	+38.61	21 6.9
22	21 35 49.92	4.933	9 22 32.2	2.91	21 34.2	22	23 9 2.95	9.079	5 14 3.3	39.64	21 6.6
23	21 37 51.38	5.185	9 23 22.5	− 1.29	21 32.4	23	23 12 41.54	9.135	4 57 59.9	40.64	21 6.3
24	21 39 58.75	5.426	9 23 34.0	+ 0.33	21 30.7	24	23 16 21.45	9.189	4 41 32.7	41.62	21 6.1
25	21 42 11.77	5.657	9 23 6.7	1.95	21 29.1	25	23 20 2.61	9.240	4 24 42.4	42.57	21 5.9
26	21 44 30.21	+5.877	−9 22 0.4	+ 3.56	21 27.5	26	23 23 44.97	+9.289	−4 7 29.9	+43.48	21 5.7
27	21 46 53.82	6.088	9 20 15.8	5.16	21 26.0	27	23 27 28.49	9.336	3 49 55.7	44.36	21 5.5
28	21 49 22.36	6.289	9 17 52.9	6.75	21 24.6	28	23 31 13.12	9.382	3 32 0.6	45.22	21 5.3
29	21 51 55.59	6.480	9 14 52.2	8.32	21 23.3	29	23 34 58.79	9.425	3 13 45.2	43.05	21 5.1
30	21 54 33.32	6.662	9 11 13.9	9.87	21 22.1	30	23 38 45.48	9.466	2 55 10.3	46.85	21 5.0
31	21 57 15.32	+6.836	−9 6 58.5	+11.41	21 20.9	31	23 42 33.15	+9.506	−2 36 16.7	+47.62	21 4.8
32	22 0 1.39	+7.001	−9 2 6.3	+12.93	21 19.8	32	23 46 21.75	+9.544	−2 17 5.1	+48.35	21 4.7

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . .	28″.0	26″.1	24″.2	22″.3	20″.5	18″.9	Semidiameter . .	17″.5	16″.2	15″.2	14″.2	13″.3	12″.5
Hor. Parallax . .	29.0	27.0	25.0	23.0	21.2	19.6	Hor. Parallax . .	18.1	16.8	15.7	14.7	13.8	13.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

	MAY.						JUNE.				
Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.	Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	23 42 33.15	+ 9.506	−2 36 16.7	+47.62	21 4.8	1	1 46 52.41	+10.559	+ 8 39 56.8	+56.80	21 7.3
2	23 46 21.75	9.544	2 17 5.1	48.35	21 4.7	2	1 51 6.28	10.597	9 2 37.8	56.62	21 7.6
3	23 50 11.25	9.581	1 57 36.2	49.05	21 4.6	3	1 55 21.09	10.636	9 25 14.2	56.41	21 7.9
4	23 54 1.62	9.617	1 37 50.8	49.72	21 4.5	4	1 59 36.84	10.676	9 47 45.2	56.17	21 8.2
5	23 57 52.85	9.652	1 17 49.6	50.36	21 4.4	5	2 3 53.54	10.716	10 10 10.0	55.90	21 8.6
6	0 1 44.91	+ 9.686	−0 57 33.4	+50.98	21 4.4	6	2 8 11.21	+10.757	+10 32 27.9	+55.60	21 9.0
7	0 5 37.76	9.719	0 37 2.8	51.57	21 4.4	7	2 12 29.87	10.798	10 54 38.3	55.27	21 9.4
8	0 9 31.41	9.752	−0 16 18.5	52.12	21 4.3	8	2 16 49.53	10.840	11 16 40.5	54.91	21 9.8
9	0 13 25.83	9.784	+0 4 38.8	52.64	21 4.3	9	2 21 10.21	10.883	11 38 33.7	54.52	21 10.2
10	0 17 21.01	9.815	0 25 48.3	53.14	21 4.3	10	2 25 31.91	10.926	12 0 17.2	54.10	21 10.6
11	0 21 16.94	+ 9.847	+0 47 9.4	+53.61	21 4.3	11	2 29 54.65	+10.970	+12 21 50.3	+53.65	21 11.1
12	0 25 13.63	9.878	1 8 41.4	54.05	21 4.3	12	2 34 18.46	11.015	12 43 12.4	53.17	21 11.5
13	0 29 11.07	9.909	1 30 23.5	54.46	21 4.4	13	2 38 43.34	11.060	13 4 22.7	52.67	21 12.0
14	0 33 9.26	9.940	1 52 15.2	54.84	21 4.4	14	2 43 9.33	11.106	13 25 20.5	52.14	21 12.5
15	0 37 8.20	9.971	2 14 15.8	55.19	21 4.4	15	2 47 36.44	11.153	13 46 5.2	51.58	21 13.0
16	0 41 7.89	+10.003	+2 36 24.5	+55.52	21 4.5	16	2 52 4.67	+11.200	+14 6 36.1	+50.99	21 13.5
17	0 45 8.34	10.035	2 58 40.8	55.82	21 4.6	17	2 56 34.04	11.248	14 26 52.4	50.37	21 14.1
18	0 49 9.56	10.067	3 21 3.9	56.10	21 4.7	18	3 1 4.58	11.297	14 46 53.4	49.72	21 14.7
19	0 53 11.56	10.099	3 43 33.3	56.35	21 4.8	19	3 5 36.29	11.346	15 6 38.5	49.04	21 15.3
20	0 57 14.33	10.132	4 6 8.2	56.56	21 4.9	20	3 10 9.18	11.395	15 26 7.0	48.33	21 15.9
21	1 1 17.91	+10.165	+4 28 47.9	+56.74	21 5.0	21	3 14 43.25	+11.445	+15 45 18.0	+47.59	21 16.6
22	1 5 22.29	10.199	4 51 31.6	56.89	21 5.1	22	3 19 18.53	11.495	16 4 11.0	46.82	21 17.3
23	1 9 27.48	10.233	5 14 18.8	57.02	21 5.2	23	3 23 55.02	11.545	16 22 45.1	46.02	21 18.0
24	1 13 33.50	10.268	5 37 8.7	57.12	21 5.4	24	3 28 32.71	11.595	16 40 59.7	45.19	21 18.7
25	1 17 40.34	10.303	6 0 0.5	57.18	21 5.6	25	3 33 11.61	11.646	16 58 54.1	44.33	21 19.4
26	1 21 48.02	+10.338	+6 22 53.5	+57.22	21 5.8	26	3 37 51.72	+11.696	+17 16 27.5	+43.44	21 20.1
27	1 25 56.56	10.374	6 45 47.1	57.23	21 6.0	27	3 42 33.04	11.747	17 33 39.3	42.53	21 20.9
28	1 30 5.97	10.410	7 8 40.5	57.21	21 6.2	28	3 47 15.56	11.797	17 50 28.6	41.59	21 21.6
29	1 34 16.24	10.447	7 31 32.9	57.16	21 6.4	29	3 51 59.29	11.847	18 6 54.8	40.61	21 22.4
30	1 38 27.40	10.484	7 54 23.7	57.07	21 6.7	30	3 56 44.21	11.896	18 22 57.3	39.61	21 23.2
31	1 42 39.45	+10.521	+8 17 11.9	+56.95	21 7.0	31	4 1 30.31	+11.945	+18 38 35.4	+38.57	21 24.1
32	1 46 52.41	+10.559	+8 39 56.8	+56.80	21 7.3	32	4 6 17.58	+11.994	+18 53 48.4	+37.51	21 25.0

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
	″	″	″	″	″	″	″
Semidiameter . .	11.8	11.2	10.7	10.2	9.7	9.3	8.9
Hor. Parallax . .	12.2	11.6	11.0	10.5	10.0	9.6	9.2

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
	″	″	″	″	″	″
Semidiameter . .	8.6	8.3	8.0	7.7	7.5	7.2
Hor. Parallax . .	8.9	8.6	8.3	8.0	7.7	7.5

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

	JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	4 1 30.31	+11.945	+18 38 35.4	+38.57	21 24.1	1	6 37 11.70	+12.940	+22 29 20.9	− 4.21	21 58.0
2	4 6 17.58	11.994	18 53 48.4	37.51	21 25.0	2	6 42 22.33	12.944	22 27 20.7	5.80	21 59.2
3	4 11 6.01	12.042	19 8 35.6	36.42	21 25.9	3	6 47 33.04	12.946	22 24 42.4	7.39	22 0.4
4	4 15 55.59	12.089	19 22 56.2	35.30	21 26.8	4	6 52 43.77	12.946	22 21 25.9	8.98	22 1.7
5	4 20 46.30	12.136	19 36 49.7	34.16	21 27.8	5	6 57 54.47	12.944	22 17 31.3	10.57	22 2.9
6	4 25 38.12	+12.182	+19 50 15.6	+32.99	21 28.7	6	7 3 5.09	+12.940	+22 12 58.7	−12.15	22 4.1
7	4 30 31.03	12.227	20 3 13.2	31.80	21 29.7	7	7 8 15.59	12.934	22 7 48.0	13.74	22 5.3
8	4 35 25.03	12.272	20 15 41.9	30.59	21 30.6	8	7 13 25.91	12.926	22 1 59.4	15.32	22 6.6
9	4 40 20.09	12.316	20 27 41.2	29.35	21 31.6	9	7 18 36.02	12.916	21 55 32.9	16.89	22 7.8
10	4 45 16.19	12.359	20 39 10.4	28.08	21 32.6	10	7 23 45.86	12.904	21 48 28.7	18.46	22 9.0
11	4 50 13.31	+12.401	+20 50 9.0	+26.79	21 33.6	11	7 28 55.40	+12.890	+21 40 47.0	−20.02	22 10.2
12	4 55 11.42	12.442	21 0 36.4	25.48	21 34.6	12	7 34 4.59	12.875	21 32 28.0	21.57	22 11.5
13	5 0 10.49	12.481	21 10 32.1	24.15	21 35.7	13	7 39 13.39	12.858	21 23 31.9	23.11	22 12.7
14	5 5 10.52	12.519	21 19 55.7	22.80	21 36.8	14	7 44 21.76	12.839	21 13 58.9	24.64	22 13.9
15	5 10 11.46	12.557	21 28 46.6	21.43	21 37.9	15	7 49 29.67	12.819	21 3 49.1	26.16	22 15.1
16	5 15 13.27	+12.593	+21 37 4.4	+20.04	21 39.0	16	7 54 37.08	+12.797	+20 53 3.0	−27.67	22 16.2
17	5 20 15.94	12.628	21 44 48.6	18.63	21 40.1	17	7 59 43.95	12.774	20 41 40.8	29.17	22 17.4
18	5 25 19.43	12.662	21 51 58.7	17.20	21 41.2	18	8 4 50.25	12.750	20 29 42.9	30.65	22 18.6
19	5 30 23.70	12.694	21 58 34.4	15.76	21 42.4	19	8 9 55.96	12.725	20 17 9.6	32.12	22 19.8
20	5 35 28.72	12.725	22 4 35.1	14.30	21 43.5	20	8 15 1.04	12.698	20 4 1.2	33.57	22 20.9
21	5 40 34.47	+12.754	+22 10 0.5	+12.82	21 44.7	21	8 20 5.46	+12.670	+19 50 18.2	−35.01	22 22.0
22	5 45 40.89	12.781	22 14 50.2	11.33	21 45.8	22	8 25 9.20	12.641	19 36 0.9	36.43	22 23.1
23	5 50 47.94	12.806	22 19 4.0	9.82	21 47.0	23	8 30 12.23	12.611	19 21 9.7	37.84	22 24.2
24	5 55 55.57	12.829	22 22 41.4	8.30	21 48.2	24	8 35 14.52	12.580	19 5 45.1	39.22	22 25.3
25	6 1 3.73	12.850	22 25 42.2	6.76	21 49.4	25	8 40 16.05	12.548	18 49 47.5	40.58	22 26.4
26	6 6 12.38	+12.870	+22 28 5.9	+ 5.21	21 50.6	26	8 45 16.80	+12.515	+18 33 17.6	−41.92	22 27.4
27	6 11 21.46	12.887	22 29 52.5	3.66	21 51.9	27	8 50 16.75	12.481	18 16 15.7	43.24	22 28.5
28	6 16 30.94	12.902	22 31 1.7	2.10	21 53.1	28	8 55 15.89	12.447	17 58 42.4	44.53	22 29.5
29	6 21 40.76	12.915	22 31 33.3	+ 0.53	21 54.3	29	9 0 14.19	12.412	17 40 38.2	45.80	22 30.5
30	6 26 50.86	12.926	22 31 27.1	− 1.05	21 55.5	30	9 5 11.66	12.377	17 22 3.8	47.05	22 31.5
31	6 32 1.19	+12.934	+22 30 43.0	− 2.63	21 56.8	31	9 10 8.27	+12.341	+17 2 59.7	−48.28	22 32.5
32	6 37 11.70	+12.940	+22 29 20.9	− 4.21	21 58.0	32	9 15 4.02	+12.305	+16 43 26.5	−49.48	22 33.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	7″.0	6″.9	6″.7	6″.5	6″.4	6″.2	Semidiameter . .	6″.1	6″.0	5″.9	5″.8	5″.7	5″.6
Hor. Parallax . .	7.3	7.1	6 9	6.8	6.6	6.5	Hor. Parallax . .	6.3	6.2	6.1	6.0	5.9	5.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.						OCTOBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	9 15 4.02	+12.305	+16 43 26.5	−49.48	22 33.4	1	11 36 56.02	+11.474	+ 4 4 20.4	−72.77	22 56.7
2	9 19 58.89	12.268	16 23 24.8	50.66	22 34.4	2	11 41 31.27	11.464	3 35 10.0	73.09	22 57.4
3	9 24 52.87	12.231	16 2 55.2	51.81	22 35.3	3	11 46 6.29	11.455	3 5 52.4	73.38	22 58.0
4	9 29 45.98	12.194	15 41 58.3	52.93	22 36.3	4	11 50 41.11	11.448	2 36 28.2	73.63	22 58.7
5	9 34 38.21	12.158	15 20 34.7	54.03	22 37.2	5	11 55 15.77	11.442	2 6 58.2	73.86	22 59.3
6	9 39 29.56	+12.122	+14 58 45.1	−55.10	22 38.1	6	11 59 50.31	+11.438	+ 1 37 23.0	−74.08	22 59.9
7	9 44 20.05	12.086	14 36 30.1	56.15	22 39.0	7	12 4 24.77	11.435	1 7 43.5	74.23	23 0.5
8	9 49 9.68	12.050	14 13 50.3	57.17	22 39.9	8	12 8 59.18	11.434	0 38 0.3	74.36	23 1.2
9	9 53 58.45	12.015	13 50 46.5	58.15	22 40.7	9	12 13 33.59	11.434	+ 0 8 14.2	74.47	23 1.8
10	9 58 46.39	11.980	13 27 19.2	59.11	22 41.6	10	12 18 8.03	11.436	− 0 21 34.0	74.54	23 2.5
11	10 3 33.50	+11.946	+13 3 29.1	−60.05	22 42.4	11	12 22 42.55	+11.440	− 0 51 23.7	−74.58	23 3.1
12	10 8 19.80	11.913	12 39 16.8	60.96	22 43.2	12	12 27 17.19	11.446	1 21 14.1	74.60	23 3.8
13	10 13 5.30	11.880	12 14 43.1	61.84	22 44.0	13	12 31 51.99	11.454	1 51 4.5	74.59	23 4.4
14	10 17 50.03	11.846	11 49 48.5	62.69	22 44.8	14	12 36 27.00	11.464	2 20 54.2	74.55	23 5.0
15	10 22 34.00	11.817	11 24 33.7	63.52	22 45.6	15	12 41 2.26	11.475	2 50 42.4	74.47	23 5.6
16	10 27 17.25	+11.787	+10 58 59.5	−64.32	22 46.4	16	12 45 37.80	+11.488	− 3 20 28.4	−74.36	23 6.2
17	10 31 59.79	11.758	10 33 6.4	65.09	22 47.1	17	12 50 13.67	11.502	3 50 11.6	74.22	23 6.9
18	10 36 41.65	11.731	10 6 55.3	65.83	22 47.9	18	12 54 49.91	11.518	4 19 51.0	74.05	23 7.6
19	10 41 22.85	11.704	9 40 26.7	66.54	22 48.6	19	12 59 26.56	11.536	4 49 25.9	73.85	23 8.3
20	10 46 3.42	11.678	9 13 41.4	67.22	22 49.3	20	13 4 3.66	11.556	5 18 55.7	73.62	23 9.0
21	10 50 43.39	+11.653	+ 8 46 39.9	−67.88	22 50.0	21	13 8 41.26	+11.577	− 5 48 19.5	−73.36	23 9.7
22	10 55 22.77	11.629	8 19 23.1	68.51	22 50.7	22	13 13 19.39	11.600	6 17 36.6	73.06	23 10.4
23	11 0 1.60	11.607	7 51 51.7	69.10	22 51.4	23	13 17 58.09	11.625	6 46 46.2	72.73	23 11.1
24	11 4 39.91	11.586	7 24 6.4	69.66	22 52.1	24	13 22 37.40	11.651	7 15 47.5	72.37	23 11.8
25	11 9 17.72	11.566	6 56 7.8	70.20	22 52.8	25	13 27 17.35	11.679	7 44 39.7	71.97	23 12.6
26	11 13 55.08	+11.547	+ 6 27 56.8	−70.70	22 53.5	26	13 31 57.98	+11.708	− 8 13 22.0	−71.54	23 13.3
27	11 18 32.00	11.530	5 59 34.0	71.18	22 54.1	27	13 36 39.33	11.738	8 41 53.6	71.08	23 14.1
28	11 23 8.53	11.515	5 31 0.3	71.62	22 54.8	28	13 41 21.42	11.770	9 10 13.8	70.59	23 14.8
29	11 27 44.69	11.500	5 2 16.3	72.04	22 55.4	29	13 46 4.30	11.804	9 38 21.7	70.06	23 15.6
30	11 32 20.51	11.486	4 33 22.7	72.42	22 56.1	30	13 50 47.99	11.839	10 6 16.6	69.50	23 16.4
31	11 36 56.02	+11.474	+ 4 4 20.4	−72.77	22 56.7	31	13 55 32.52	+11.874	−10 33 57.5	−68.90	23 17.2
32	11 41 31.27	+11.464	+ 3 35 10.0	−73.09	22 57.4	32	14 0 17.92	+11.911	−11 1 23.7	−68.27	23 18.0

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.	Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	5.″6	5.″5	5.″4	5.″4	5.″3	5.″3	Semidiameter	5.″2	5.″2	5.″1	5.″1	5.″1	5.″1
Hor. Parallax . . .	5.8	5.7	5.6	5.5	5.5	5.4	Hor. Parallax	5.4	5.4	5.3	5.3	5.3	5.2

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

	NOVEMBER.						DECEMBER.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	14 0 17.92	+11.911	−11 1 23.7	−68.27	23 18.0	1	16 31 32.30	+13.327	−21 44 52.9	−34.16	23 51.6
2	14 5 4.22	11.949	11 28 34.2	67.61	23 18.9	2	16 36 52.67	13.369	21 58 13.6	32.56	23 53.0
3	14 9 51.46	11.989	11 55 28.6	66.91	23 19.7	3	16 42 14.02	13.410	22 10 55.5	30.93	23 54.4
4	14 14 39.67	12.030	12 22 5.8	66.18	23 20.6	4	16 47 36.31	13.448	22 22 58.0	29.27	23 55.9
5	14 19 28.89	12.073	12 48 25.1	65.42	23 21.5	5	16 52 59.50	13.484	22 34 20.5	27.59	23 57.3
6	14 24 19.14	+12.116	−13 14 26.0	−64.63	23 22.4	6	16 58 23.54	+13.518	−22 45 2.5	−25.90	23 58.8
7	14 29 10.43	12.160	13 40 7.2	63.80	23 23.3	7	17 3 48.38	13.551	22 55 3.5	24.19	
8	14 34 2.79	12.205	14 5 27.9	62.93	23 24.3	8	17 9 13.98	13.582	23 4 23.1	22.45	0 0.3
9	14 38 56.24	12.251	14 30 27.6	62.03	23 25.3	9	17 14 40.30	13.611	23 13 0.8	20.69	0 1.8
10	14 43 50.80	12.297	14 55 5.3	61.10	23 26.3	10	17 20 7.29	13.638	23 20 56.3	18.92	0 3.3
11	14 48 46.49	+12.345	−15 19 20.4	−60.14	23 27.3	11	17 25 34.90	+13.663	−23 28 9.1	−17.14	0 4.8
12	14 53 43.33	12.393	15 43 12.0	59.15	23 28.3	12	17 31 3.08	13.686	23 34 39.0	15.34	0 6.3
13	14 58 41.35	12.442	16 6 39.3	58.12	23 29.3	13	17 36 31.76	13.705	23 40 25.5	13.53	0 7.9
14	15 3 40.56	12.492	16 29 41.6	57.06	23 30.4	14	17 42 0.89	13.722	23 45 28.4	11.71	0 9.4
15	15 8 40.97	12.542	16 52 18.0	55.97	23 31.5	15	17 47 30.41	13.737	23 49 47.4	9.88	0 11.0
16	15 13 42.60	+12.593	−17 14 27.7	−54.84	23 32.6	16	17 53 0.26	+13.750	−23 53 22.4	− 8.04	0 12.5
17	15 18 45.45	12.644	17 36 10.0	53.68	23 33.7	17	17 58 30.39	13.760	23 56 13.1	6.19	0 14.1
18	15 23 49.53	12.696	17 57 24.1	52.49	23 34.9	18	18 4 0.72	13.767	23 58 19.3	4.33	0 15.6
19	15 28 54.85	12.747	18 18 9.2	51.26	23 36.1	19	18 9 31.20	13.772	23 59 40.9	2.47	0 17.2
20	15 34 1.40	12.798	18 38 24.5	50.00	23 37.3	20	18 15 1.76	13.774	24 0 17.9	− 0.61	0 18.7
21	15 39 9.18	+12.849	−18 58 9.2	−48.71	23 38.5	21	18 20 32.34	+13.773	−24 0 10.1	+ 1.25	0 20.3
22	15 44 18.19	12.901	19 17 22.6	47.39	23 39.7	22	18 26 2.87	13.770	23 59 17.6	3.12	0 21.9
23	15 49 28.43	12.952	19 36 3.9	46.04	23 40.9	23	18 31 33.29	13.764	23 57 40.3	4.98	0 23.5
24	15 54 39.87	13.002	19 54 12.5	44.66	23 42.2	24	18 37 3.53	13.755	23 55 18.3	6.84	0 25.1
25	15 59 52.51	13.051	20 11 47.5	43.25	23 43.5	25	18 42 33.51	13.743	23 52 11.7	8.70	0 26.6
26	16 5 6.33	+13.100	−20 28 48.1	−41.80	23 44.8	26	18 48 3.18	+13.728	−23 48 20.6	+10.56	0 28.2
27	16 10 21.31	13.148	20 45 13.8	40.33	23 46.1	27	18 53 32.47	13.711	23 43 45.1	12.40	0 29.7
28	16 15 37.43	13.195	21 1 3.8	38.83	23 47.5	28	18 59 1.31	13.691	23 38 25.5	14.24	0 31.3
29	16 20 54.65	13.240	21 16 17.4	37.30	23 48.8	29	19 4 29.65	13.669	23 32 22.1	16.06	0 32.8
30	16 26 12.95	13.284	21 30 54.0	35.74	23 50.2	30	19 9 57.42	13.644	23 25 35.0	17.87	0 34.3
31	16 31 32.30	+13.327	−21 44 52.9	−34.16	23 51.6	31	19 15 24.55	+13.616	−23 18 4.6	+19.67	0 35.8
32	16 36 52.67	+13.369	−21 58 13.6	−32.56	23 53.0	32	19 20 51.00	+13.586	−23 9 51.1	+21.45	0 37.3

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Polar Semidiameter . .	5.″0	5.″0	5.″0	5.″0	5.″0	5.″0
Horizontal Parallax . .	5.2	5.2	5.2	5.2	5.2	5.2

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . .	5.″0	5.″0	5.″0	5.″0	5.″0	5.″0	5.″1
Hor. Parallax . .	5.2	5.2	5.2	5.2	5.2	5.2	5.2

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

JANUARY.						FEBRUARY.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	15 52 43.12	+7.046	−19 56 33.4	−22.92	21 7.2	1	17 23 8.92	+7.504	−23 15 37.4	− 8.59	20 35.6
2	15 55 32.45	7.064	20 5 38.6	22.52	21 6.1	2	17 26 9.15	7.514	23 18 57.4	8.07	20 34.7
3	15 58 22.21	7.082	20 14 34.2	22.11	21 5.0	3	17 29 9.61	7.524	23 22 4.9	7.55	20 33.7
4	16 1 12.38	7.099	20 23 19.9	21.70	21 3.9	4	17 32 10.29	7.533	23 25 0.0	7.03	20 32.8
5	16 4 2.96	7.116	20 31 55.8	21.28	21 2.8	5	17 35 11.19	7.542	23 27 42.5	6.51	20 31.8
6	16 6 53.96	+7.133	−20 40 21.6	−20.85	21 1.7	6	17 38 12.29	+7.550	−23 30 12.4	− 5.98	20 30.9
7	16 9 45.36	7.150	20 48 37.4	20.42	21 0.7	7	17 41 13.58	7.558	23 32 29.6	5.45	20 30.0
8	16 12 37.17	7.167	20 56 42.9	19.99	20 59.6	8	17 44 15.06	7.565	23 34 34.2	4.92	20 29.1
9	16 15 29.37	7.183	21 4 38.0	19.56	20 58.6	9	17 47 16.70	7.572	23 36 26.2	4.39	20 28.2
10	16 18 21.96	7.199	21 12 22.7	19.13	20 57.5	10	17 50 18.50	7.578	23 38 5.4	3.86	20 27.3
11	16 21 14.94	+7.215	−21 19 56.8	−18.69	20 56.5	11	17 53 20.45	+7.584	−23 39 31.8	− 3.33	20 26.4
12	16 24 8.30	7.231	21 27 20.3	18.25	20 55.4	12	17 56 22.54	7.590	23 40 45.4	2.80	20 25.5
13	16 27 2.04	7.247	21 34 33.0	17.80	20 54.4	13	17 59 24.77	7.595	23 41 46.3	2.27	20 24.6
14	16 29 56.16	7.262	21 41 34.9	17.35	20 53.3	14	18 2 27.12	7.600	23 42 34.3	1.74	20 23.7
15	16 32 50.64	7.278	21 48 25.9	16.89	20 52.3	15	18 5 29.58	7.605	23 43 9.4	1.20	20 22.8
16	16 35 45.48	+7.293	−21 55 5.8	−16.43	20 51.2	16	18 8 32.15	+7.609	−23 43 31.7	− 0.66	20 21.9
17	16 38 40.69	7.308	22 1 34.6	15.97	20 50.2	17	18 11 34.82	7.613	23 43 41.2	− 0.13	20 21.0
18	16 41 36.26	7.323	22 7 52.3	15.50	20 49.2	18	18 14 37.58	7.617	23 43 37.8	+ 0.41	20 20.1
19	16 44 32.18	7.338	22 13 58.6	15.03	20 48.2	19	18 17 40.44	7.621	23 43 21.4	0.95	20 19.2
20	16 47 28.45	7.352	22 19 53.7	14.55	20 47.2	20	18 20 43.38	7.624	23 42 52.1	1.49	20 18.3
21	16 50 25.07	+7.366	−22 25 37.3	−14.07	20 46.2	21	18 23 46.37	+7.626	−23 42 9.9	+ 2.03	20 17.4
22	16 53 22.03	7.380	22 31 9.3	13.59	20 45.2	22	18 26 49.42	7.628	23 41 14.7	2.57	20 16.5
23	16 56 19.32	7.394	22 36 29.7	13.10	20 44.2	23	18 29 52.51	7.630	23 40 6.7	3.11	20 15.6
24	16 59 16.95	7.408	22 41 38.4	12.61	20 43.2	24	18 32 55.64	7.631	23 38 45.7	3.65	20 14.8
25	17 2 14.90	7.421	22 46 35.3	12.12	20 42.3	25	18 35 58.80	7.632	23 37 11.7	4.19	20 13.9
26	17 5 13.17	+7.434	−22 51 20.3	−11.63	20 41.3	26	18 39 1.97	+7.632	−23 35 24.9	+ 4.72	20 13.0
27	17 8 11.75	7.447	22 55 53.5	11.13	20 40.4	27	18 42 5.14	7.632	23 33 25.2	5.26	20 12.1
28	17 11 10.62	7.459	23 0 14.6	10.63	20 39.4	28	18 45 8.30	7.631	23 31 12.6	5.80	20 11.2
29	17 14 9.78	7.471	23 4 23.7	10.12	20 38.4	29	18 48 11.43	7.630	23 28 47.1	6.33	20 10.3
30	17 17 9.23	7.482	23 8 20.5	9.61	20 37.5	30	18 51 14.53	7.628	23 26 8.8	6.86	20 9.5
31	17 20 8.95	+7.493	−23 12 5.2	− 9.10	20 36.5	31	18 54 17.58	+7.626	−23 23 17.7	+ 7.39	20 8.6
32	17 23 8.92	+7.504	−23 15 37.4	− 8.59	20 35.6	32	18 57 20.56	+7.623	−23 20 13.9	+ 7.92	20 7.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	2″.3	2″.3	2″.4	2″.4	2″.5	2″.5	2″.6
Hor. Parallax . .	4.0	4.1	4.2	4.2	4.3	4.4	4.5

Day of the Month.	5th.	10th.	15th.	20th.	25th.
Semidiameter	2″.6	2″.7	2″.7	2″.8	2″.8
Hor. Parallax	4.6	4.7	4.8	4.9	5.0

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

	MARCH.						APRIL.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	18 48 11.43	+7.630	−23 28 47.1	+ 6.33	20 10.3	1	20 21 39.10	+7.392	−20 32 11.4	+21.65	19 41.5
2	18 51 14.53	7.628	23 26 8.8	6.86	20 9.5	2	20 24 36.35	7.379	20 23 26.4	22.09	19 40.5
3	18 54 17.58	7.626	23 23 17.7	7.39	20 8.6	3	20 27 33.28	7.366	20 14 31.1	22.52	19 39.5
4	18 57 20.56	7.623	23 20 13.9	7.92	20 7.7	4	20 30 29.89	7.352	20 5 25.6	22.94	19 38.5
5	19 0 23.46	7.619	23 16 57.3	8.45	20 6.8	5	20 33 26.17	7.338	19 56 10.1	23.36	19 37.5
6	19 3 26.28	+7.615	−23 13 28.0	+ 8.98	20 5.9	6	20 36 22.11	+7.324	−19 46 44.6	+23.77	19 36.5
7	19 6 28.99	7.610	23 9 46.3	9.51	20 5.0	7	20 39 17.70	7.310	19 37 9.3	24.17	19 35.5
8	19 9 31.59	7.605	23 5 51.9	10.03	20 4.1	8	20 42 12.95	7.295	19 27 24.4	24.57	19 34.4
9	19 12 34.06	7.600	23 1 44.9	10.55	20 3.2	9	20 45 7.85	7.280	19 17 30.1	24.96	19 33.4
10	19 15 36.40	7.594	22 57 25.5	11.07	20 2.3	10	20 48 2.38	7.265	19 7 26.3	25.35	19 32.4
11	19 18 38.60	+7.588	−22 52 53.7	+11.58	20 1.4	11	20 50 56.56	+7.250	−18 57 13.4	+25.73	19 31.3
12	19 21 40.65	7.582	22 48 9.6	12.09	20 0.5	12	20 53 50.38	7.235	18 46 51.2	26.11	19 30.3
13	19 24 42.53	7.575	22 43 13.3	12.60	19 59.6	13	20 56 43.84	7.220	18 36 20.1	26.48	19 29.2
14	19 27 44.24	7.568	22 38 4.8	13.11	19 58.7	14	20 59 36.93	7.205	18 25 40.1	26.85	19 28.2
15	19 30 45.78	7.560	22 32 44.1	13.61	19 57.8	15	21 2 29.66	7.190	18 14 51.4	27.21	19 27.1
16	19 33 47.14	+7.553	−22 27 11.4	+14.11	19 56.8	16	21 5 22.04	+7.175	−18 3 54.1	+27.56	19 26.1
17	19 36 48.31	7.545	22 21 26.7	14.61	19 55.9	17	21 8 14.05	7.159	17 52 48.4	27.91	19 25.0
18	19 39 49.29	7.537	22 15 30.1	15.11	19 54.9	18	21 11 5.69	7.144	17 41 34.3	28.26	19 23.9
19	19 42 50.07	7.529	22 9 21.6	15.60	19 54.0	19	21 13 56.97	7.129	17 30 12.0	28.60	19 22.8
20	19 45 50.64	7.520	22 3 1.4	16.09	19 53.0	20	21 16 47.89	7.114	17 18 41.6	28.93	19 21.7
21	19 48 51.01	+7.511	−21 56 29.4	+16.58	19 52.1	21	21 19 38.44	+7.099	−17 7 3.3	+29.26	19 20.6
22	19 51 51.16	7.502	21 49 45.9	17.07	19 51.2	22	21 22 28.63	7.084	16 55 17.1	29.58	19 19.5
23	19 54 51.08	7.493	21 42 50.8	17.55	19 50.2	23	21 25 18.44	7.068	16 43 23.4	29.90	19 18.4
24	19 57 50.78	7.483	21 35 44.2	18.02	19 49.3	24	21 28 7.89	7.053	16 31 22.1	30.21	19 17.3
25	20 0 50.24	7.473	21 28 26.3	18.49	19 48.3	25	21 30 56.96	7.037	16 19 13.4	30.51	19 16.1
26	20 3 49.46	+7.462	−21 20 57.1	+18.95	19 47.4	26	21 33 45.65	+7.021	−16 6 57.6	+30.80	19 15.0
27	20 6 48.42	7.451	21 13 16.8	19.41	19 46.4	27	21 36 33.96	7.005	15 54 34.8	31.09	19 13.9
28	20 9 47.12	7.440	21 5 25.4	19.87	19 45.4	28	21 39 21.87	6.989	15 42 5.2	31.37	19 12.8
29	20 12 45.54	7.429	20 57 23.0	20.32	19 44.5	29	21 42 9.39	6.972	15 29 29.1	31.64	19 11.6
30	20 15 43.68	7.417	20 49 9.8	20.77	19 43.5	30	21 44 56.52	6.955	15 16 46.4	31.91	19 10.4
31	20 18 41.53	+7.405	−20 40 45.9	+21.21	19 42.5	31	21 47 43.24	+6.938	−15 3 57.5	+32.17	19 9.2
32	20 21 39.10	+7.392	−20 32 11.4	+21.65	19 41.5	32	21 50 29.56	+6.921	−14 51 2.4	+32.42	19 8.0

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.
Semidiameter . .	2″.9	3″.0	3″.1	3″.1	3″.2	3″.3	Semidiameter. .	3″.4	3″.5	3″.6	3″.7	3″.8	3″.9
Hor. Parallax . .	5.1	5.2	5.4	5.5	5.6	5.8	Hor. Parallax . .	5.9	6.1	6.3	6.5	6.6	6.8

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.						JUNE.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	21 47 43.24	+6.938	−15 3 57.5	+32.17	19 9.2	1	23 10 26.98	+6.402	−7 50 24.8	+36.61	18 29.6
2	21 50 29.56	6.921	14 51 2.4	32.42	19 8.0	2	23 13 0.40	6.383	7 35 45.9	36.63	18 28.2
3	21 53 15.47	6.904	14 38 1.4	32.66	19 6.8	3	23 15 33.36	6.364	7 21 6.6	36.63	18 26.8
4	21 56 0.95	6.887	14 24 54.8	32.89	19 5.6	4	23 18 5.86	6.345	7 6 27.1	36.64	18 25.4
5	21 58 46.02	6.869	14 11 42.6	33.11	19 4.4	5	23 20 37.90	6.326	6 51 47.7	36.64	18 24.0
6	22 1 30.67	+6.852	−13 58 25.1	+33.32	19 3 2	6	23 23 9.47	+6.306	−6 37 8.3	+36.63	18 22.6
7	22 4 14.91	6.835	13 45 2.4	33.53	19 2.0	7	23 25 40.58	6.286	6 22 29.5	36.61	18 21.1
8	22 6 58.73	6.817	13 31 34.7	33.76	19 0.8	8	23 28 11.21	6.267	6 7 51.1	36.59	18 19.7
9	22 9 42.12	6.800	13 18 2.1	33.96	18 59.6	9	23 30 41.37	6.247	5 53 13.4	36.56	18 18.2
10	22 12 25.09	6.782	13 4 24.8	34.15	18 58.3	10	23 33 11.05	6.227	5 38 36.6	36.52	18 16.7
11	22 15 7.65	+6.765	−12 50 43.0	+34.33	18 57.1	11	23 35 40.27	+6.208	−5 24 0.8	+36.47	18 15.3
12	22 17 49.79	6.748	12 36 56.9	34.51	18 55.9	12	23 38 9.02	6.188	5 9 26.2	36.42	18 13.8
13	22 20 31.52	6.730	12 23 6.6	34.69	18 54.6	13	23 40 37.29	6.168	4 54 52.6	36.36	18 12.4
14	22 23 12.84	6.713	12 9 12.2	34.86	18 53.4	14	23 43 5.09	6.148	4 40 20.4	36.30	18 10.9
15	22 25 53.75	6.696	11 55 13.8	35.02	18 52.1	15	23 45 32.42	6.128	4 25 49.8	36.23	18 9.4
16	22 28 34.25	+6.679	−11 41 11.7	+35.17	18 50.9	16	23 47 59.26	+6.108	−4 11 20.9	+36.16	18 7.9
17	22 31 14.36	6.663	11 27 6.0	35.31	18 49.6	17	23 50 25.62	6.088	3 56 54.0	36.08	18 6.4
18	22 33 54.06	6.646	11 12 56.9	35.45	18 48.3	18	23 52 51.49	6.068	3 42 29.3	35.99	18 4.9
19	22 36 33.37	6.629	10 58 44.4	35.58	18 47.0	19	23 55 16.86	6.047	3 28 7.1	35.89	18 3.3
20	22 39 12.27	6.613	10 44 28.8	35.71	18 45.7	20	23 57 41.73	6.026	3 13 47.3	35.78	18 1.8
21	22 41 50.77	+6.596	−10 30 10.2	+35.83	18 44.4	21	0 0 6.09	+6.004	−2 59 29.9	+35.67	18 0.3
22	22 44 28.87	6.579	10 15 48.8	35.94	18 43.1	22	0 2 29.93	5.982	2 45 15.1	35.55	17 58.7
23	22 47 6.57	6.562	10 1 24.9	36.05	18 41.8	23	0 4 53.24	5.960	2 31 3.5	35.42	17 57.2
24	22 49 43.86	6.545	9 46 58.5	36.15	18 40.5	24	0 7 16.01	5.937	2 16 55.1	35.28	17 55.6
25	22 52 20.74	6.528	9 32 29.9	36.24	18 39.1	25	0 9 38.23	5.914	2 2 50.1	35.13	17 54.0
26	22 54 57.20	+6.511	− 9 17 59.3	+36.32	18 37.8	26	0 11 59.87	+5.890	−1 48 48.8	+34.97	17 52.4
27	22 57 33.24	6.493	9 3 26.9	36.39	18 36.4	27	0 14 20.94	5.865	1 34 51.3	34.80	17 50.8
28	23 0 8.86	6.475	8 48 52.8	36.45	18 35.0	28	0 16 41.40	5.840	1 20 58.0	34.62	17 49.2
29	23 2 44.05	6.457	8 34 17.3	36.50	18 33.7	29	0 19 1.25	5.814	1 7 8.9	34.44	17 47.6
30	23 5 18.80	6.439	8 19 40.7	36.54	18 32.3	30	0 21 20.47	5.788	0 53 24.3	34.25	17 46.0
31	23 7 53.11	+6.421	− 8 5 3.2	+36.58	18 31.0	31	0 23 39.06	+5.761	−0 39 44.3	+34.06	17 44.3
32	23 10 26.98	+6.402	− 7 50 24.8	+36.61	18 29.6	32	0 25 56.99	+5.733	−0 26 9.3	+33.86	17 42.7

Day of the Month.	1st.	6th.	11th.	16th.	21st.	26th.	31st.
Semidiameter . .	4″.0	4″.1	4″.2	4″.3	4″.5	4″.7	4″.8
Hor. Parallax . .	7.0	7.2	7.4	7.6	7.9	8.1	8.4

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.
Semidiameter . .	4″.9	5″.1	5″.2	5″.4	5″.6	5″.8
Hor. Parallax . .	8.6	8.9	9.2	9.5	9.8	10.1

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	0 23 39.06	+5.761	−0 39 44.3	+34.06	17 44.3	1	1 28 31.59	+4.550	+5 31 19.5	+24.74	16 46.7
2	0 25 56.99	5.733	0 26 9.3	33.86	17 42.7	2	1 30 20.12	4.492	5 41 8.4	24.33	16 44.5
3	0 28 14.24	5.705	−0 12 39.3	33.65	17 41.0	3	1 32 7.24	4.433	5 50 47.6	23.92	16 42.4
4	0 30 30.81	5.676	+0 0 45.5	33.43	17 39.4	4	1 33 52.90	4.372	6 0 16.7	23.51	16 40.2
5	0 32 46.67	5.646	0 14 5.0	33.20	17 37.6	5	1 35 37.09	4.310	6 9 35.7	23.09	16 37.9
6	0 35 1.82	+5.616	+0 27 19.0	+32.96	17 35.9	6	1 37 19.76	+4.246	+6 18 44.8	+22.67	16 35.7
7	0 37 16.25	5.586	0 40 27.1	32.72	17 34.2	7	1 39 0.88	4.180	6 27 43.7	22.24	16 33.4
8	0 39 29.95	5.555	0 53 29.4	32.47	17 32.5	8	1 40 40.39	4.113	6 36 32.3	21.81	16 31.2
9	0 41 42.91	5.524	1 6 26.0	32.22	17 30.8	9	1 42 18.26	4.044	6 45 10.6	21.38	16 28.8
10	0 43 55.10	5.492	1 19 16.5	31.97	17 29.0	10	1 43 54.48	3.974	6 53 38.4	20.94	16 26.4
11	0 46 6.51	+5.459	+1 32 0.8	+31.71	17 27.3	11	1 45 29.00	+3.902	+7 1 55.8	+20.50	16 24.0
12	0 48 17.14	5.426	1 44 38.7	31.45	17 25.5	12	1 47 1.78	3.829	7 10 2.7	20.06	16 21.6
13	0 50 26.96	5.392	1 57 10.2	31.18	17 23.7	13	1 48 32.78	3.754	7 17 58.8	19.61	16 19.2
14	0 52 35.96	5.357	2 9 35.1	30.90	17 21.9	14	1 50 1.95	3.677	7 25 44.2	19.16	16 16.8
15	0 54 44.14	5.322	2 21 53.4	30.62	17 20.0	15	1 51 29.25	3.597	7 33 18.6	18.71	16 14.3
16	0 56 51.47	+5.287	+2 34 4.9	+30.33	17 18.2	16	1 52 54.61	+3.515	+7 40 42.1	+18.25	16 11.7
17	0 58 57.92	5.251	2 46 9.3	30.03	17 16.3	17	1 54 18.00	3.432	7 47 54.4	17.78	16 9.2
18	1 1 3.47	5.213	2 58 6.7	29.73	17 14.6	18	1 55 39.38	3.347	7 54 55.4	17.31	16 6.5
19	1 3 8.12	5.174	3 9 56.7	29.42	17 12.7	19	1 56 58.67	3.259	8 1 45.0	16.83	16 3.9
20	1 5 11.83	5.134	3 21 39.3	29.11	17 10.8	20	1 58 15.84	3.169	8 8 23.1	16.35	16 1.2
21	1 7 14.57	+5.093	+3 33 14.2	+28.79	17 8.9	21	1 59 30.80	+3.076	+8 14 49.5	+15.86	15 58.5
22	1 9 16.32	5.051	3 44 41.2	28.46	17 7.0	22	2 0 43.48	2.980	8 21 3.9	15.36	15 55.8
23	1 11 17.03	5.008	3 56 0.3	28.12	17 5.0	23	2 1 53.85	2.882	8 27 6.2	14.86	15 53.0
24	1 13 16.69	4.963	4 7 11.1	27.77	17 3.1	24	2 3 1.83	2.782	8 32 56.3	14.34	15 50.2
25	1 15 15.25	4.917	4 18 13.6	27.42	17 1.1	25	2 4 7.37	2.679	8 38 34.1	13.82	15 47.3
26	1 17 12.69	+4.869	+4 29 7.4	+27.06	16 59.1	26	2 5 10.40	+2.573	+8 43 59.6	+13.30	15 44.4
27	1 19 8.96	4.820	4 39 52.4	26.69	16 57.1	27	2 6 10.86	2.464	8 49 12.5	12.77	15 41.4
28	1 21 4.03	4.769	4 50 28.4	26.31	16 55.0	28	2 7 8.69	2.353	8 54 12.5	12.24	15 38.4
29	1 22 57.87	4.717	5 0 55.3	25.93	16 53.0	29	2 8 3.82	2.240	8 58 59.8	11.71	15 35.4
30	1 24 50.43	4.663	5 11 12.9	25.54	16 50.9	30	2 8 56.19	2.124	9 3 34.3	11.17	15 32.3
31	1 26 41.68	+4.607	+5 21 21.0	+25.14	16 48.8	31	2 9 45.76	+2.006	+9 7 55.9	+10.63	15 29.1
32	1 28 31.59	+4.550	+5 31 19.5	+24.74	16 46.7	32	2 10 32.47	+1.886	+9 12 4.5	+10.09	15 25.9

Day of the Month.	5th.	10th.	15th.	20th.	25th.	30th.	Day of the Month.	4th.	9th.	14th.	19th.	24th.	29th.
Semidiameter . .	6.″0	6.″2	6.″5	6.″7	7.″0	7.″2	Semidiameter . .	7.″5	7.″8	8.″1	8.″5	8.″8	9.″1
Hor. Parallax . .	10.5	10.9	11.3	11.7	12.1	12.6	Hor. Parallax . .	13.1	13.6	14.2	14.8	15.4	16.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	2 10 32.47	+1.886	+9 12 4.5	+10.09	15 25.9
2	2 11 16.27	1.764	9 16 0.2	9.55	15 22.7
3	2 11 57.12	1.640	9 19 42.9	9.01	15 19.4
4	2 12 34.97	1.514	9 23 12.7	8.47	15 16.1
5	2 13 9.79	1.386	9 26 29.6	7.93	15 12.7
6	2 13 41.52	+1.256	+9 29 33.5	+ 7.39	15 9.2
7	2 14 10.10	1.125	9 32 24.3	6.85	15 5.8
8	2 14 35.51	0.992	9 35 2.1	6.31	15 2.2
9	2 14 57.71	0.857	9 37 27.0	5.77	14 58.6
10	2 15 16.65	0.721	9 39 39.0	5.23	14 55.0
11	2 15 32.35	+0.584	+9 41 37.8	+ 4.69	14 51.3
12	2 15 44.73	0.446	9 43 23.6	4.15	14 47.5
13	2 15 53.74	0.306	9 44 56.4	3.60	14 43.7
14	2 15 59.37	0.164	9 46 16.0	3 05	14 39.8
15	2 16 1.59	+0.021	9 47 22.6	2.51	14 35.9
16	2 16 0.38	−0.123	+9 48 16.1	+ 1.96	14 31.9
17	2 15 55.70	0.267	9 48 56.4	1.41	14 27.9
18	2 15 47.54	0.413	9 49 23.6	0.86	14 23.8
19	2 15 35.88	0.559	9 49 37.6	+ 0.31	14 19.6
20	2 15 20.72	0.705	9 49 38.5	− 0.23	14 15.4
21	2 15 2.03	−0.852	+9 49 26.2	− 0.77	14 11.1
22	2 14 39.83	0.998	9 49 0.9	1.31	14 6.8
23	2 14 14.12	1.143	9 48 22.9	1.85	14 2.4
24	2 13 44.95	1.288	9 47 32.2	2.38	13 57.9
25	2 13 12.32	1.430	9 46 28.8	2.90	13 53.4
26	2 12 36.30	−1.571	+9 45 13.1	− 3.40	13 48.8
27	2 11 56.92	1.709	9 43 45.6	3.89	13 44.2
28	2 11 14.27	1.844	9 42 6.3	4.37	13 39.6
29	2 10 28.40	1.976	9 40 15.7	4.84	13 34.8
30	2 9 39.43	2.104	9 38 14.1	5.29	13 30.1
31	2 8 47.42	−2.227	+9 36 2.1	− 5.71	13 25.3
32	2 7 52.51	−2.346	+9 33 40.1	− 6.11	13 20.4

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter . . .	9.″5	9.″9	10.″3	10.″7	11.″0	11.″3
Hor. Parallax . . .	16.7	17.4	18.1	18.7	19.3	19.8

OCTOBER.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	2 8 47.42	−2.227	+9 36 2.1	−5.71	13 25.3
2	2 7 52.51	2.346	9 33 40.1	6.11	13 20.4
3	2 6 54.82	2.459	9 31 8.9	6.49	13 15.5
4	2 5 54.47	2.567	9 28 28.7	6.85	13 10.5
5	2 4 51.60	2.669	9 25 40.2	7.19	13 5.5
6	2 3 46.36	−2.765	+9 22 43.9	−7.51	13 0.5
7	2 2 38.89	2.854	9 19 40.5	7.79	12 55.4
8	2 1 29.35	2.937	9 16 30.7	8.04	12 50.3
9	2 0 17.90	3.013	9 13 14.9	8.27	12 45.2
10	1 59 4.71	3.082	9 9 53.9	8.47	12 40.1
11	1 57 49.95	−3.144	+9 6 28.4	−8.64	12 34.9
12	1 56 33.80	3.198	9 2 59.1	8.78	12 29.7
13	1 55 16.44	3.245	8 59 26.6	8.90	12 24.5
14	1 53 58.06	3.284	8 55 51.7	8.99	12 19.2
15	1 52 38.82	3.315	8 52 15.1	9.04	12 14.0
16	1 51 18.93	−3.339	+8 48 37.5	−9.06	12 8.8
17	1 49 58.55	3.355	8 44 59.5	9.06	12 3.5
18	1 48 37.88	3.363	8 41 22.0	9.03	11 58.2
19	1 47 17.10	3.363	8 37 45.8	8.97	11 52.9
20	1 45 56.43	3.355	8 34 11.7	8.88	11 47.7
21	1 44 36.04	−3.339	+8 30 40.4	−8.75	11 42.4
22	1 43 16.15	3.314	8 27 12.8	8.57	11 37.1
23	1 41 56.93	3.282	8 23 50.1	8.35	11 31.8
24	1 40 38.60	3.241	8 20 32.7	8.09	11 26.6
25	1 39 21.33	3.194	8 17 21.6	7.80	11 21.4
26	1 38 5.31	−3.138	+8 14 17.4	−7.49	11 16.2
27	1 36 50.71	3.075	8 11 21.2	7.15	11 11.1
28	1 35 37.70	3.005	8 8 33.6	6.78	11 5.9
29	1 34 26.48	2.927	8 5 55.3	6.38	11 0.9
30	1 33 17.18	2.844	8 3 27.3	5.95	10 55.8
31	1 32 9.99	−2.754	+8 1 10.2	−5.49	10 50.8
32	1 31 5.02	−2.657	+7 59 4.6	−5.00	10 45.8

Day of the Month.	3d.	8th.	13th.	18th.	23d.	28th.
Semidiameter	11.″5	11.″7	11.″7	11.″7	11.″5	11.″2
Hor. Parallax	20.2	20.5	20.5	20.4	20.0	19.6

Note.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 31 5.02	−2.657	+7 59 4.6	− 5.00	10 45.8
2	1 30 2.43	2.556	7 57 11.0	4.48	10 40.8
3	1 29 2.31	2.449	7 55 29.9	3.94	10 35.9
4	1 28 4.77	2.342	7 54 1.9	3.39	10 31.0
5	1 27 9.91	2.228	7 52 47.2	2.83	10 26.2
6	1 26 17.82	−2.111	+7 51 46.3	− 2.25	10 21.4
7	1 25 28.56	1.991	7 50 59.4	1.66	10 16.7
8	1 24 42.23	1.869	7 50 26.9	1.06	10 12.1
9	1 23 58.85	1.745	7 50 8.8	− 0.45	10 7.5
10	1 23 18.46	1.620	7 50 5.3	+ 0.16	10 2.9
11	1 22 41.10	−1.493	+7 50 16.5	+ 0.77	9 58.3
12	1 22 6.81	1.365	7 50 42.5	1.39	9 53.8
13	1 21 35.60	1.236	7 51 23.4	2.01	9 49.4
14	1 21 7.48	1.107	7 52 19.1	2.63	9 45.0
15	1 20 42.46	0.977	7 53 29.5	3.25	9 40.7
16	1 20 20.57	−0.847	+7 54 54.9	+ 3.87	9 36.4
17	1 20 1.79	0.718	7 56 35.1	4.48	9 32.2
18	1 19 46.10	0.589	7 58 30.0	5.09	9 28.1
19	1 19 33.51	0.460	8 0 39.7	5.70	9 23.9
20	1 19 24.03	0.331	8 3 3.9	6.31	9 19.9
21	1 19 17.62	−0.203	+8 5 42.7	+ 6.92	9 15.8
22	1 19 14.29	−0.075	8 8 36.0	7.52	9 11.9
23	1 19 14.01	+0.052	8 11 43.7	8.12	9 8.0
24	1 19 16.77	0.177	8 15 5.6	8.71	9 4.1
25	1 19 22.53	0.302	8 18 41.6	9.29	9 0.2
26	1 19 31.27	+0.426	+8 22 31.6	+ 9.87	8 56.5
27	1 19 42.95	0.548	8 26 35.4	10.44	8 52.7
28	1 19 57.57	0.669	8 30 52.8	11.00	8 49.1
29	1 20 15.07	0.788	8 35 23.6	11.55	8 45.4
30	1 20 35.43	0.906	8 40 7.6	12.09	8 41.9
31	1 20 58.60	+1.023	+8 45 4.6	+12.62	8 38.4
32	1 21 24.53	+1.137	+8 50 14.1	+13.14	8 34.9

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.
Polar Semidiameter . .	10″.8	10″.4	10″.0	9″.5	9″.0	8″.5
Hor. Parallax	18.9	18.2	17.4	16.6	15.6	14.8

DECEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	1 20 58.60	+1.023	+ 8 45 4.6	+12.62	8 38.4
2	1 21 24.53	1.137	8 50 14.1	13.14	8 34.9
3	1 21 53.17	1.249	8 55 36.0	13.66	8 31.5
4	1 22 24.48	1.359	9 1 9.9	14.16	8 28.1
5	1 22 58.41	1.467	9 6 55.6	14.65	8 24.7
6	1 23 34.91	+1.575	+ 9 12 52.6	+15.12	8 21.4
7	1 24 13.92	1.677	9 19 0.8	15.57	8 18.1
8	1 24 55.39	1.778	9 25 19.7	16.00	8 14.9
9	1 25 39.26	1.877	9 31 48.9	16.42	8 11.7
10	1 26 25.50	1.974	9 38 28.2	16.83	8 8.5
11	1 27 14.03	+2.069	+ 9 45 17.3	+17.23	8 5.4
12	1 28 4.81	2.162	9 52 15.8	17.62	8 2.3
13	1 28 57.78	2.252	9 59 23.3	18.00	7 59.3
14	1 29 52.91	2.341	10 6 39.6	18.36	7 56.3
15	1 30 50.15	2.428	10 14 4.4	18.71	7 53.3
16	1 31 49.46	+2.513	+10 21 37.5	+19.05	7 50.4
17	1 32 50.77	2.596	10 29 18.5	19.38	7 47.5
18	1 33 54.07	2.678	10 37 7.3	19.69	7 44.6
19	1 34 59.32	2.759	10 45 3.6	19.99	7 41.8
20	1 36 6.48	2.838	10 53 6.9	20.29	7 39.0
21	1 37 15.51	+2.915	+11 1 17.2	+20.58	7 36.2
22	1 38 26.38	2.991	11 9 34.4	20.86	7 33.5
23	1 39 39.06	3.066	11 17 58.0	21.12	7 30.7
24	1 40 53.51	3.139	11 26 27.9	21.37	7 28.1
25	1 42 9.71	3.210	11 35 3.9	21.61	7 25.4
26	1 43 27.61	+3.280	+11 43 45.7	+21.84	7 22.8
27	1 44 47.19	3.349	11 52 33.0	22.07	7 20.2
28	1 46 8.41	3.418	12 1 25.5	22.29	7 17.6
29	1 47 31.24	3.485	12 10 23.1	22.50	7 15.0
30	1 48 55.64	3.550	12 19 25.5	22.70	7 12.5
31	1 50 21.59	+3.613	+12 28 32.4	+22.88	7 10.0
32	1 51 49.07	+3.675	+12 37 43.6	+23.05	7 7.5

Day of the Month.	2d.	7th.	12th.	17th.	22d.	27th.	32d.
Semidiameter . .	8″.0	7″.6	7″.2	6″.8	6″.4	6″.1	5″.8
Hor. Parallax . .	14.0	13.3	12.5	11.8	11.2	10.6	10.1

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

	JANUARY.						FEBRUARY.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	3 18 21.26	−0.503	+17 17 40.4	−1.21	8 32.4	1	3 18 50.72	+0.563	+17 28 8.1	+2.83	6 31.1
2	3 18 12.65	0.467	17 17 12.8	1.08	8 28.3	2	3 19 4.62	0.596	17 29 17.4	2.95	6 27.4
3	3 18 1.86	0.433	17 16 48.4	0.95	8 24.2	3	3 19 19.30	0.628	17 30 29.6	3.07	6 23.8
4	3 17 51.87	0.399	17 16 27.1	0.82	8 20.1	4	3 19 34.76	0.660	17 31 44.5	3.18	6 20.1
5	3 17 42.73	0.364	17 16 9.0	0.69	8 16.0	5	3 19 50.98	0.692	17 33 2.1	3.29	6 16.5
6	3 17 34.42	−0.330	+17 15 54.2	−0.56	8 12.0	6	3 20 7.97	+0.724	+17 34 22.5	+3.40	6 12.7
7	3 17 26.93	0.295	17 15 42.6	0.42	8 8.0	7	3 20 25.71	0.755	17 35 45.6	3.51	6 9.1
8	3 17 20.28	0.260	17 15 34.2	0.28	8 3.9	8	3 20 44.21	0.786	17 37 11.2	3.62	6 5.5
9	3 17 14.46	0.225	17 15 29.0	0.15	7 59.9	9	3 21 3.44	0.817	17 38 39.4	3.73	6 1.9
10	3 17 9.50	0.190	17 15 27.1	−0.01	7 55.9	10	3 21 23.41	0.847	17 40 10.1	3.83	5 58.3
11	3 17 5.37	−0.154	+17 15 28.4	+0.12	7 51.9	11	3 21 44.12	+0.877	+17 41 43.4	+3.93	5 54.7
12	3 17 2.09	0.119	17 15 33.0	0.26	7 47.9	12	3 22 5.54	0.907	17 43 19.0	4.03	5 51.1
13	3 16 59.65	0.084	17 15 40.9	0.40	7 43.9	13	3 22 27.68	0.937	17 44 57.0	4.13	5 47.6
14	3 16 58.05	0.049	17 15 52.1	0.53	7 40.0	14	3 22 50.52	0.966	17 46 37.4	4.23	5 44.0
15	3 16 57.30	−0.014	17 16 6.4	0.67	7 36.0	15	3 23 14.06	0.995	17 48 20.1	4.32	5 40.5
16	3 16 57.38	+0.021	+17 16 24.0	+0.80	7 32.1	16	3 23 38.28	+1.024	+17 50 4.9	+4.41	5 37.0
17	3 16 58.30	0.056	17 16 44.7	0.93	7 28.2	17	3 24 3.19	1.052	17 51 52.0	4.50	5 33.4
18	3 17 0.06	0.091	17 17 8.6	1.07	7 24.3	18	3 24 28.77	1.080	17 53 41.2	4.59	5 29.9
19	3 17 2.66	0.126	17 17 35.7	1.20	7 20.4	19	3 24 55.02	1.107	17 55 32.5	4.68	5 26.4
20	3 17 6.09	0.160	17 18 6.0	1.33	7 16.5	20	3 25 21.93	1.134	17 57 25.8	4.77	5 23.0
21	3 17 10.34	+0.195	+17 18 39.4	+1.46	7 12.6	21	3 25 49.49	+1.161	+17 59 21.1	+4.85	5 19.5
22	3 17 15.41	0.229	17 19 16.0	1.59	7 8.8	22	3 26 17.69	1.188	18 1 18.4	4.93	5 16.0
23	3 17 21.31	0.263	17 19 55.6	1.72	7 5.0	23	3 26 46.53	1.215	18 3 17.7	5.01	5 12.6
24	3 17 28.02	0.297	17 20 38.4	1.85	7 1.2	24	3 27 16.00	1.241	18 5 18.7	5.09	5 9.1
25	3 17 35.54	0.331	17 21 24.2	1.98	6 57.4	25	3 27 46.10	1.267	18 7 21.6	5.16	5 5.7
26	3 17 43.88	+0.364	+17 22 13.0	+2.10	6 53.6	26	3 28 16.81	+1.293	+18 9 26.2	+5.23	5 2.3
27	3 17 53.02	0.398	17 23 4.8	2.23	6 49.8	27	3 28 48.14	1.318	18 11 32.6	5.30	4 58.9
28	3 18 2.97	0.431	17 23 59.6	2.35	6 46.0	28	3 29 20.07	1.343	18 13 40.6	5.37	4 55.5
29	3 18 13.72	0.464	17 24 57.4	2.47	6 42.3	29	3 29 52.60	1.368	18 15 50.2	5.44	4 52.1
30	3 18 25.26	0.497	17 25 58.1	2.59	6 38.6	30	3 30 25.73	1.393	18 18 1.5	5.51	4 48.7
31	3 18 37.59	+0.530	+17 27 1.7	+2.71	6 34.8	31	3 30 59.44	+1.417	+18 20 14.3	+5.57	4 45.3
32	3 18 50.72	+0.563	+17 28 8.1	+2.83	6 31.1	32	3 31 33.72	+1.441	+18 22 28.6	+5.63	4 41.9

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	21″.7	21″.2	20″.7	20″.2	Polar Semidiameter . .	19″.6	19″.1	18″.6	18″.2
Horizontal Parallax . .	2.0	2.0	1.9	1.9	Horizontal Parallax . .	1.8	1.8	1.7	1.7

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

	MARCH.						APRIL.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	3 29 52.60	+1.368	+18 15 50.2	+5.44	4 52.1	1	3 50 58.10	+1.987	+19 31 58.2	+6.53	3 11.2
2	3 30 25.73	1.393	18 18 1.5	5.51	4 48.7	2	3 51 45.97	2.002	19 34 35.1	6.54	3 8.1
3	3 30 59.44	1.417	18 20 14.3	5.57	4 45.3	3	3 52 34.20	2.017	19 37 12.2	6.54	3 5.0
4	3 31 33.72	1.441	18 22 28.6	5.63	4 41.9	4	3 53 22.80	2.032	19 39 49.4	6.55	3 1.9
5	3 32 8.58	1.465	18 24 44.4	5.69	4 38.6	5	3 54 11.75	2.047	19 42 26.6	6.55	2 58.8
6	3 32 44.00	+1.488	+18 27 1.6	+5.74	4 35.3	6	3 55 1.05	+2.061	+19 45 3.8	+6.55	2 55.7
7	3 33 19.99	1.511	18 29 20.1	5.80	4 31.9	7	3 55 50.70	2.075	19 47 41.0	6.54	2 52.6
8	3 33 56.52	1.534	18 31 39.9	5.85	4 28.6	8	3 56 40.68	2.089	19 50 18.1	6.54	2 49.4
9	3 34 33.59	1.556	18 34 1.0	5.90	4 25.3	9	3 57 30.99	2.103	19 52 55.1	6.53	2 46.3
10	3 35 11.19	1.578	18 36 23.3	5.95	4 22.0	10	3 58 21.62	2.116	19 55 31.9	6.53	2 43.2
11	3 35 49.32	+1.600	+18 38 46.7	+6.00	4 18.7	11	3 59 12.56	+2.129	+19 58 8.6	+6.52	2 40.1
12	3 36 27.97	1.621	18 41 11.2	6.04	4 15.4	12	4 0 3.82	2.142	20 0 45.0	6.51	2 37.0
13	3 37 7.13	1.642	18 43 36.7	6.08	4 12.1	13	4 0 55.37	2.154	20 3 21.2	6.50	2 33.9
14	3 37 46.79	1.663	18 46 3.3	6.12	4 8.9	14	4 1 47.21	2.166	20 5 57.0	6.49	2 30.8
15	3 38 26.94	1.683	18 48 30.8	6.16	4 5.6	15	4 2 39.36	2.178	20 8 32.6	6.48	2 27.8
16	3 39 7.58	+1.703	+18 50 59.2	+6.20	4 2.4	16	4 3 31.77	+2.190	+20 11 7.7	+6.46	2 24.7
17	3 39 48.69	1.723	18 53 28.4	6.24	3 59.1	17	4 4 24.47	2.201	20 13 42.5	6.44	2 21.7
18	3 40 30.27	1.742	18 55 58.5	6.27	3 55.9	18	4 5 17.44	2.212	20 16 16.7	6.42	2 18.6
19	3 41 12.32	1.761	18 58 29.3	6.30	3 52.6	19	4 6 10.67	2.223	20 18 50.6	6.40	2 15.6
20	3 41 54.82	1.780	19 1 0.7	6.33	3 49.4	20	4 7 4.16	2.234	20 21 23.9	6.38	2 12.5
21	3 42 37.77	+1.799	+19 3 32.8	+6.35	3 46.2	21	4 7 57.90	+2.245	+20 23 56.7	+6.36	2 9.5
22	3 43 21.17	1.817	19 6 5.6	6.38	3 43.0	22	4 8 51.90	2.255	20 26 29.0	6.34	2 6.4
23	3 44 5.00	1.835	19 8 38.9	6.40	3 39.8	23	4 9 46.13	2.265	20 29 0.7	6.31	2 3.4
24	3 44 49.26	1.853	19 11 12.7	6.42	3 36.6	24	4 10 40.61	2.275	20 31 31.8	6.29	2 0.3
25	3 45 33.94	1.871	19 13 47.1	6.44	3 33.4	25	4 11 35.33	2.285	20 34 2.2	6.26	1 57.3
26	3 46 19.04	+1.888	+19 16 21.9	+6.46	3 30.2	26	4 12 30.27	+2.294	+20 36 31.9	+6.23	1 54.3
27	3 47 4.56	1.905	19 18 57.2	6.48	3 27.0	27	4 13 25.44	2.303	20 39 1.0	6.20	1 51.3
28	3 47 50.48	1.922	19 21 32.8	6.50	3 23.8	28	4 14 20.83	2.312	20 41 29.4	6.17	1 48.3
29	3 48 36.80	1.939	19 24 8.7	6.51	3 20.6	29	4 15 16.43	2.321	20 43 57.0	6.13	1 45.3
30	3 49 23.51	1.955	19 26 45.0	6.52	3 17.5	30	4 16 12.25	2.330	20 46 23.8	6.10	1 42.3
31	3 50 10.62	+1.971	+19 29 21.5	+6.53	3 14.3	31	4 17 8.26	+2.338	+20 48 49.9	+6.07	1 39.3
32	3 50 58.10	+1.987	+19 31 58.2	+6.53	3 11.2	32	4 18 4.48	+2.346	+20 51 15.2	+6.03	1 36.3

Day of the Month.	6th.	14th.	22d.	30th.	Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter . .	17″.7	17″.3	17″.0	16″.7	Polar Semidiameter .	16″.4	16″.2	16″.0	15″.8
Horizontal Parallax . .	1.7	1.6	1.6	1.6	Horizontal Parallax .	1.5	1.5	1.5	1.5

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

MAY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	4 17 8.26	+2.338	+20 48 49.9	+6.07	1 39.3
2	4 18 4.48	2.346	20 51 15.2	6.03	1 36.3
3	4 19 0.88	2.354	20 53 39.5	6.00	1 33.3
4	4 19 57.48	2.362	20 56 3.0	5.96	1 30.3
5	4 20 54.25	2.369	20 58 25.6	5.92	1 27.3
6	4 21 51.20	+2.376	+21 0 47.2	+5.88	1 24.3
7	4 22 48.32	2.383	21 3 7.8	5.84	1 21.4
8	4 23 45.60	2.390	21 5 27.5	5.80	1 18.4
9	4 24 43.03	2.396	21 7 46.2	5.76	1 15.4
10	4 25 40.62	2.402	21 10 3.7	5.72	1 12.4
11	4 26 38.35	+2.408	+21 12 20.2	+5.67	1 9.4
12	4 27 36.21	2.414	21 14 35.6	5.63	1 6.5
13	4 28 34.21	2.419	21 16 50.0	5.58	1 3.5
14	4 29 32.34	2.424	21 19 3.2	5.53	1 0.5
15	4 30 30.58	2.429	21 21 15.3	5.48	0 57.6
16	4 31 28.94	+2.434	+21 23 26.2	+5.43	0 54.6
17	4 32 27.41	2.439	21 25 35.9	5.38	0 51.7
18	4 33 26.00	2.443	21 27 44.4	5.33	0 48.7
19	4 34 24.68	2.447	21 29 51.7	5.28	0 45.7
20	4 35 23.46	2.451	21 31 57.8	5.23	0 42.8
21	4 36 22.34	+2.455	+21 34 2.6	+5.18	0 39.8
22	4 37 21.31	2.459	21 36 6.2	5.13	0 36.8
23	4 38 20.36	2.462	21 38 8.5	5.07	0 33.9
24	4 39 19.49	2.465	21 40 9.5	5.02	0 30.9
25	4 40 18.70	2.468	21 42 9.3	4.97	0 28.0
26	4 41 17.98	+2.471	+21 44 7.7	+4.91	0 25.0
27	4 42 17.32	2.474	21 46 4.7	4.86	0 22.1
28	4 43 16.73	2.477	21 48 0.5	4.80	0 19.1
29	4 44 16.20	2.479	21 49 54.9	4.74	0 16.2
30	4 45 15.72	2.481	21 51 47.9	4.68	0 13.3
31	4 46 15.28	+2.483	+21 53 39.5	+4.62	0 10.4
32	4 47 14.88	+2.484	+21 55 29.7	+4.56	0 7.5

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	15″.8	15″.7	15″.6	15″.5
Horizontal Parallax . .	1.5	1.5	1.5	1.5

JUNE.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	4 47 14.88	+2.484	+21 55 29.7	+4.56	0 7.5
2	4 48 14.52	2.485	21 57 18.6	4.50	0 4.5
3	4 49 14.18	2.486	21 59 5.9	4.44	0 1.6 23 58.6
4	4 50 13.87	2.487	22 0 51.9	4.38	23 55.7
5	4 51 13.57	2.487	22 2 36.4	4.32	23 52.7
6	4 52 13.28	+2.488	+22 4 19.4	+4.26	23 49.8
7	4 53 13.00	2.488	22 6 1.0	4.20	23 46.8
8	4 54 12.72	2.488	22 7 41.1	4.14	23 43.9
9	4 55 12.44	2.487	22 9 19.8	4.08	23 40.9
10	4 56 12.14	2.487	22 10 56.9	4.02	23 38.0
11	4 57 11.82	+2.486	+22 12 32.5	+3.96	23 35.1
12	4 58 11.48	2.485	22 14 6.6	3.90	23 32.1
13	4 59 11.11	2.484	22 15 39.2	3.83	23 29.2
14	5 0 10.71	2.483	22 17 10.3	3.77	23 26.2
15	5 1 10.27	2.481	22 18 39.9	3.71	23 23.3
16	5 2 9.79	+2.479	+22 20 8.0	+3.64	23 20.3
17	5 3 9.27	2.477	22 21 34.6	3.58	23 17.4
18	5 4 8.69	2.475	22 22 59.6	3.52	23 14.4
19	5 5 8.06	2.472	22 24 23.1	3.45	23 11.5
20	5 6 7.37	2.470	22 25 45.1	3.39	23 8.5
21	5 7 6.62	+2.467	+22 27 5.5	+3.33	23 5.6
22	5 8 5.79	2.464	22 28 24.4	3.26	23 2.7
23	5 9 4.90	2.461	22 29 41.8	3.20	22 59.7
24	5 10 3.92	2.458	22 30 57.7	3.13	22 56.8
25	5 11 2.86	2.454	22 32 12.1	3.06	22 53.8
26	5 12 1.71	+2.450	+22 33 24.9	+3.00	22 50.9
27	5 13 0.47	2.446	22 34 36.2	2.93	22 47.9
28	5 13 59.13	2.442	22 35 46.0	2.87	22 44.9
29	5 14 57.68	2.437	22 36 54.2	2.80	22 41.9
30	5 15 56.12	2.432	22 38 1.0	2.74	22 38.9
31	5 16 54.43	+2.427	+22 39 6.1	+2.68	22 36.0
32	5 17 52.62	+2.421	+22 40 9.8	+2.61	22 33.0

Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	15″.5	15″.5	15″.5	15″.6
Horizontal Parallax . .	1.5	1.5	1.5	1.5

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 16 54.43	+2.427	+22 39 6.1	+2.68	22 36.0
2	5 17 52.62	2.421	22 40 9.8	2.61	22 33.0
3	5 18 50.68	2.416	22 41 11.9	2.55	22 30.0
4	5 19 48.61	2.410	22 42 12.3	2.49	22 27.0
5	5 20 46.39	2.404	22 43 11.5	2.42	22 24.0
6	5 21 44.02	+2.398	+22 44 9.1	+2.36	22 21.1
7	5 22 41.50	2.391	22 45 5.2	2.30	22 18.1
8	5 23 38.81	2.384	22 45 59.7	2.24	22 15.1
9	5 24 35.95	2.377	22 46 52.8	2.18	22 12.1
10	5 25 32.92	2.370	22 47 44.4	2.12	22 9.2
11	5 26 29.71	+2.362	+22 48 34.5	+2.06	22 6.2
12	5 27 26.31	2.354	22 49 23.2	2.00	22 3.2
13	5 28 22.72	2.346	22 50 10.3	1.94	22 0.2
14	5 29 18.94	2.338	22 50 56.1	1.88	21 57.2
15	5 30 14.96	2.330	22 51 40.4	1.82	21 54.2
16	5 31 10.77	+2.321	+22 52 23.3	+1.76	21 51.2
17	5 32 6.37	2.312	22 53 4.8	1.70	21 48.1
18	5 33 1.76	2.303	22 53 44.9	1.64	21 45.1
19	5 33 56.93	2.294	22 54 23.6	1.58	21 42.1
20	5 34 51.86	2.284	22 55 0.9	1.52	21 39.1
21	5 35 46.57	+2.274	+22 55 36.9	+1.46	21 36.1
22	5 36 41.04	2.264	22 56 11.4	1.41	21 33.0
23	5 37 35.27	2.254	22 56 44.7	1.35	21 30.0
24	5 38 29.25	2.244	22 57 16.6	1.30	21 27.0
25	5 39 22.97	2.233	22 57 47.2	1.25	21 23.9
26	5 40 16.43	+2.222	+22 58 16.5	+1.19	21 20.9
27	5 41 9.62	2.211	22 58 44.5	1.14	21 17.8
28	5 42 2.53	2.199	22 59 11.3	1.09	21 14.8
29	5 42 55.16	2.187	22 59 36.7	1.03	21 11.7
30	5 43 47.49	2.175	23 0 0.9	0.98	21 8.7
31	5 44 39.53	+2.162	+23 0 23.9	+0.93	21 5.6
32	5 45 31.26	+2.149	+23 0 45.6	+0.88	21 2.5

Day of the Month.	4th.	12th.	20th.	28th.
Polar Semidiameter . .	15″.7	15″.8	15″.9	16″.1
Horizontal Parallax . .	1.5	1.5	1.5	1.5

AUGUST.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	5 45 31.26	+2.149	+23 0 45.6	+0.88	21 2.5
2	5 46 22.68	2.136	23 1 6.2	0.83	20 59.4
3	5 47 13.78	2.122	23 1 25.6	0.78	20 56.3
4	5 48 4.55	2.108	23 1 43.8	0.73	20 53.2
5	5 48 54.98	2.094	23 2 0.8	0.68	20 50.1
6	5 49 45.08	+2.080	+23 2 16.7	+0.64	20 47.0
7	5 50 34.82	2.065	23 2 31.6	0.59	20 43.9
8	5 51 24.21	2.050	23 2 45.3	0.55	20 40.8
9	5 52 13.24	2.035	23 2 58.0	0.51	20 37.7
10	5 53 1.91	2.020	23 3 9.7	0.46	20 34.5
11	5 53 50.20	+2.004	+23 3 20.3	+0.42	20 31.4
12	5 54 38.11	1.988	23 3 30.0	0.38	20 28.2
13	5 55 25.63	1.972	23 3 38.7	0.34	20 25.1
14	5 56 12.77	1.956	23 3 46.4	0.30	20 21.9
15	5 56 59.50	1.939	23 3 53.2	0.27	20 18.8
16	5 57 45.83	+1.922	+23 3 59.1	+0.23	20 15.6
17	5 58 31.75	1.905	23 4 4.1	0.19	20 12.5
18	5 59 17.26	1.887	23 4 8.3	0.16	20 9.3
19	6 0 2.34	1.869	23 4 11.6	0.12	20 6.1
20	6 0 46.99	1.851	23 4 14.1	0.08	20 2.9
21	6 1 31.19	+1.833	+23 4 15.9	+0.05	19 59.7
22	6 2 14.96	1.814	23 4 16.8	+0.02	19 56.5
23	6 2 58.27	1.795	23 4 17.0	−0.01	19 53.3
24	6 3 41.12	1.776	23 4 16.5	0.04	19 50.0
25	6 4 23.49	1.756	23 4 15.2	0.07	19 46.8
26	6 5 5.39	+1.736	+23 4 13.3	−0.10	19 43.5
27	6 5 46.79	1.715	23 4 10.7	0.12	19 40.3
28	6 6 27.70	1.694	23 4 7.5	0.15	19 37.0
29	6 7 8.11	1.673	23 4 3.7	0.17	19 33.8
30	6 7 48.00	1.651	23 3 59.3	0.19	19 30.5
31	6 8 27.37	+1.629	+23 3 54.4	−0.21	19 27.2
32	6 9 6.21	+1.607	+23 3 49.0	−0.23	19 23.9

Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	16″.4	16″.6	16″.9	17″.3
Horizontal Parallax . .	1.5	1.6	1.6	1.6

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 9 6.21	+1.607	+23 3 49.0	−0.23	19 23.9
2	6 9 44.51	1.584	23 3 43.1	0.25	19 20.6
3	6 10 22.27	1.561	23 3 36.8	0.27	19 17.3
4	6 10 59.47	1.538	23 3 30.0	0.29	19 13.9
5	6 11 36.11	1.515	23 3 22.9	0.31	19 10.6
6	6 12 12.18	+1.491	+23 3 15.4	−0.33	19 7.3
7	6 12 47.69	1.467	23 3 7.5	0.34	19 3.9
8	6 13 22.60	1.443	23 2 59.3	0.35	19 0.6
9	6 13 56.93	1.418	23 2 50.9	0.36	18 57.2
10	6 14 30.65	1.393	23 2 42.1	0.37	18 53.8
11	6 15 3.78	+1.368	+23 2 33.2	−0.38	18 50.4
12	6 15 36.29	1.342	23 2 24.0	0.39	18 47.0
13	6 16 8.19	1.316	23 2 14.7	0.39	18 43.6
14	6 16 39.47	1.290	23 2 5.2	0.40	18 40.2
15	6 17 10.11	1.264	23 1 55.6	0.40	18 36.7
16	6 17 40.11	+1.237	+23 1 46.0	−0.41	18 33.3
17	6 18 9.47	1.210	23 1 36.2	0.41	18 29.9
18	6 18 38.17	1.182	23 1 26.4	0.41	18 26.4
19	6 19 6.21	1.154	23 1 16.5	0.41	18 22.9
20	6 19 33.58	1.126	23 1 6.7	0.41	18 19.4
21	6 20 0.26	+1.097	+23 0 56.9	−0.40	18 15.9
22	6 20 26.26	1.068	23 0 47.2	0.40	18 12.4
23	6 20 51.56	1.039	23 0 37.5	0.40	18 8.9
24	6 21 16.15	1.009	23 0 28.0	0.39	18 5.4
25	6 21 40.03	0.979	23 0 18.6	0.39	18 1.8
26	6 22 3.18	+0.949	+23 0 9.3	−0.38	17 58.3
27	6 22 25.60	0.918	23 0 0.1	0.37	17 54.7
28	6 22 47.28	0.887	22 59 51.5	0.36	17 51.1
29	6 23 8.21	0.856	22 59 42.9	0.35	17 47.5
30	6 23 28.39	0.825	22 59 34.6	0.34	17 43.9
31	6 23 47.81	+0.793	+22 59 26.6	−0.33	17 40.3
32	6 24 6.46	+0.761	+22 59 18.9	−0.31	17 36.7

Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	17.6″	18.0″	18.4″	18.9″
Horizontal Parallax . .	1.7	1.7	1.7	1.8

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	6 23 47.81	+0.793	+22 59 26.6	−0.33	17 40.3
2	6 24 6.46	0.761	22 59 18.9	0.31	17 36.7
3	6 24 24.33	0.729	22 59 11.6	0.30	17 33.0
4	6 24 41.42	0.696	22 59 4.6	0.29	17 29.4
5	6 24 57.73	0.663	22 58 58.1	0.27	17 25.7
6	6 25 13.24	+0.630	+22 58 51.9	−0.25	17 22.0
7	6 25 27.96	0.597	22 58 46.2	0.23	17 18.3
8	6 25 41.87	0.563	22 58 40.9	0.21	17 14.6
9	6 25 54.98	0.529	22 58 36.0	0.19	17 10.9
10	6 26 7.27	0.495	22 58 31.7	0.17	17 7.1
11	6 26 18.75	+0.461	+22 58 27.9	−0.15	17 3.4
12	6 26 29.41	0.427	22 58 24.5	0.13	16 59.6
13	6 26 39.24	0.393	22 58 21.6	0.10	16 55.8
14	6 26 48.24	0.358	22 58 19.3	0.08	16 52.0
15	6 26 56.41	0.323	22 58 17.6	0.06	16 48.3
16	6 27 3.73	+0.288	+22 58 16.4	−0.04	16 44.4
17	6 27 10.21	0.252	22 58 15.7	−0.01	16 40.6
18	6 27 15.84	0.217	22 58 15.7	+0.01	16 36.7
19	6 27 20.62	0.181	22 58 16.2	0.03	16 32.9
20	6 27 24.53	0.145	22 58 17.3	0.06	16 29.0
21	6 27 27.59	+0.109	+22 58 19.1	+0.08	16 25.1
22	6 27 29.77	0.073	22 58 21.4	0.11	16 21.2
23	6 27 31.09	0.037	22 58 24.4	0.14	16 17.3
24	6 27 31.54	+0.001	22 58 28.0	0.17	16 13.4
25	6 27 31.10	−0.036	22 58 32.2	0.19	16 9.4
26	6 27 29.79	−0.073	+22 58 37.0	+0.22	16 5.4
27	6 27 27.60	0.110	22 58 42.5	0.25	16 1.4
28	6 27 24.54	0.147	22 58 48.6	0.28	15 57.5
29	6 27 20.59	0.183	22 58 55.4	0.30	15 53.5
30	6 27 15.77	0.220	22 59 2.7	0.33	15 49.4
31	6 27 10.07	−0.256	+22 59 10.8	+0.35	15 45.4
32	6 27 3.50	−0.292	+22 59 19.4	+0.37	15 41.4

Day of the Month.	8th.	16th.	24th.	32d.
Polar Semidiameter . .	19.4″	19.9″	20.4″	20.8″
Horizontal Parallax . .	1.8	1.9	1.9	2.0

NOTE.—The sign + indicates north declinations; the sign − indicates south declinations.

GREENWICH MEAN TIME.

NOVEMBER.						DECEMBER.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.			Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	6 27 3.50	−0.292	+22 59 19.4	+0.37	15 41.4	1	6 17 31.86	−1.229	+23 7 12.4	+0.80	13 33.7
2	6 26 56.06	0.328	22 59 28.7	0.40	15 37.3	2	6 17 2.10	1.251	23 7 31.7	0.79	13 29.3
3	6 26 47.75	0.364	22 59 38.6	0.43	15 33.2	3	6 16 31.83	1.272	23 7 50.9	0.79	13 24.9
4	6 26 38.58	0.400	22 59 49.1	0.45	15 29.1	4	6 16 1.07	1.292	23 8 10.0	0.79	13 20.4
5	6 26 28.55	0.436	23 0 0.1	0.48	15 25.0	5	6 15 29.84	1.311	23 8 29.0	0.78	13 16.0
6	6 26 17.67	−0.471	+23 0 11.8	+0.50	15 20.9	6	6 14 58.17	−1.329	+23 8 47.9	+0.78	13 11.5
7	6 26 5.94	0.506	23 0 24.0	0.52	15 16.8	7	6 14 26.08	1.345	23 9 6.6	0.77	13 7.0
8	6 25 53.37	0.541	23 0 36.7	0.54	15 12.6	8	6 13 53.60	1.361	23 9 25.1	0.77	13 2.6
9	6 25 39.97	0.576	23 0 50.0	0.56	15 8.5	9	6 13 20.74	1.376	23 9 43.3	0.76	12 58.1
10	6 25 25.73	0.610	23 1 3.7	0.58	15 4.3	10	6 12 47.53	1.390	23 10 1.4	0.75	12 53.6
11	6 25 10.68	−0.644	+23 1 18.0	+0.60	15 0.1	11	6 12 14.00	−1.404	+23 10 19.1	+0.74	12 49.1
12	6 24 54.81	0.678	23 1 32.7	0.62	14 55.9	12	6 11 40.16	1.416	23 10 36.5	0.73	12 44.6
13	6 24 38.13	0.711	23 1 47.9	0.64	14 51.7	13	6 11 6.05	1.427	23 10 53.7	0.71	12 40.1
14	6 24 20.65	0.744	23 2 3.5	0.66	14 47.4	14	6 10 31.68	1.437	23 11 10.5	0.70	12 35.6
15	6 24 2.39	0.777	23 2 19.6	0.68	14 43.2	15	6 9 57.08	1.446	23 11 27.0	0.68	12 31.1
16	6 23 43.34	−0.810	+23 2 36.0	+0.69	14 39.0	16	6 9 22.27	−1.454	+23 11 43.1	+0.66	12 26.6
17	6 23 23.52	0.842	23 2 52.8	0.71	14 34.7	17	6 8 47.29	1.461	23 11 58.9	0.65	12 22.0
18	6 23 2.92	0.874	23 3 9.9	0.72	14 30.4	18	6 8 12.15	1.467	23 12 14.2	0.63	12 17.5
19	6 22 41.58	0.905	23 3 27.4	0.73	14 26.1	19	6 7 36.89	1.471	23 12 29.2	0.61	12 13.0
20	6 22 19.50	0.935	23 3 45.1	0.75	14 21.8	20	6 7 1.53	1.474	23 12 43.7	0.60	12 8.5
21	6 21 56.69	−0.965	+23 4 3.1	+0.76	14 17.5	21	6 6 26.10	−1.476	+23 12 57.9	+0.58	12 4.0
22	6 21 33.16	0.995	23 4 21.4	0.77	14 13.1	22	6 5 50.62	1.478	23 13 11.6	0.56	11 59.4
23	6 21 8.93	1.024	23 4 39.9	0.78	14 8.8	23	6 5 15.13	1.478	23 13 24.9	0.55	11 54.9
24	6 20 44.01	1.052	23 4 58.5	0.78	14 4.5	24	6 4 39.65	1.477	23 13 37.7	0.53	11 50.4
25	6 20 18.43	1.080	23 5 17.4	0.79	14 0.1	25	6 4 4.21	1.475	23 13 50.1	0.51	11 45.9
26	6 19 52.19	−1.107	+23 5 36.4	+0.79	13 55.7	26	6 3 28.84	−1.472	+23 14 2.0	+0.49	11 41.4
27	6 19 25.32	1.133	23 5 55.5	0.80	13 51.3	27	6 2 53.57	1.467	23 14 13.5	0.47	11 36.9
28	6 18 57.83	1.158	23 6 14.7	0.80	13 47.0	28	6 2 18.42	1.461	23 14 24.6	0.45	11 32.4
29	6 18 29.74	1.182	23 6 33.9	0.80	13 42.5	29	6 1 43.43	1.454	23 14 35.2	0.44	11 27.9
30	6 18 1.08	1.206	23 6 53.2	0.80	13 38.1	30	6 1 8.62	1.446	23 14 45.4	0.42	11 23.3
31	6 17 31.86	−1.229	+23 7 12.4	+0.80	13 33.7	31	6 0 34.02	−1.437	+23 14 55.2	+0.40	11 18.8
32	6 17 2.10	−1.251	+23 7 31.7	+0.79	13 29.3	32	5 59 59.67	−1.426	+23 15 4.5	+0.38	11 14.3

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	3d.	11th.	19th.	27th.	35th.
Polar Semidiameter . .	20″.8	21″.3	21″.7	22″.1	Polar Semidiameter . .	22″.4	22″.6	22″.6	22″.6	22″.5
Horizontal Parallax . .	2.0	2.0	2.0	2.1	Horizontal Parallax . .	2.1	2.1	2.1	2.1	2.1

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

	JANUARY.						FEBRUARY.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	13 33 27.94	+0.531	−7 8 32.5	−2.43	18 46.1	1	13 37 3.34	+0.037	−7 20 32.2	+0.52	16 47.6
2	13 33 40.51	0.517	7 9 29.7	2.34	18 42.3	2	13 37 4.02	0.020	7 20 18.6	0.62	16 43.7
3	13 33 52.72	0.502	7 10 24.8	2.25	18 38.5	3	13 37 4.29	+0.003	7 20 2.7	0.71	16 39.7
4	13 34 4.58	0.487	7 11 17.6	2.15	18 34.8	4	13 37 4.16	−0.014	7 19 44.6	0.81	16 35.8
5	13 34 16.09	0.472	7 12 8.2	2.06	18 31.0	5	13 37 3.63	0.031	7 19 24.1	0.90	16 31.9
6	13 34 27.23	+0.457	−7 12 56.6	−1.97	18 27.3	6	13 37 2.70	−0.047	−7 19 1.4	+1.00	16 27.9
7	13 34 38.01	0.442	7 13 42.7	1.88	18 23.5	7	13 37 1.37	0.064	7 18 36.4	1.09	16 23.9
8	13 34 48.42	0.427	7 14 26.6	1.78	18 19.8	8	13 36 59.64	0.081	7 18 9.2	1.19	16 20.0
9	13 34 58.47	0.412	7 15 8.2	1.69	18 16.1	9	13 36 57.51	0.098	7 17 39.8	1.28	16 16.0
10	13 35 8.14	0.396	7 15 47.5	1.59	18 12.3	10	13 36 54.99	0.114	7 17 8.1	1.37	16 12.0
11	13 35 17.44	+0.380	−7 16 24.6	−1.50	18 8.5	11	13 36 52.07	−0.130	−7 16 34.3	+1.46	16 8.0
12	13 35 26.36	0.364	7 16 59.4	1.40	18 4.7	12	13 36 48.76	0.146	7 15 58.3	1.55	16 4.0
13	13 35 34.91	0.348	7 17 31.9	1.30	18 0.9	13	13 36 45.06	0.162	7 15 20.2	1.64	16 0.0
14	13 35 43.08	0.332	7 18 2.1	1.21	17 57.1	14	13 36 40.98	0.178	7 14 39.9	1.72	15 56.0
15	13 35 50.86	0.316	7 18 30.0	1.11	17 53.3	15	13 36 36.52	0.194	7 13 57.5	1.81	15 52.0
16	13 35 58.26	+0.300	−7 18 55.6	−1.02	17 49.5	16	13 36 31.67	−0.210	−7 13 13.0	+1.89	15 48.0
17	13 36 5.27	0.284	7 19 18.9	0.92	17 45.7	17	13 36 26.45	0.226	7 12 26.5	1.98	15 44.0
18	13 36 11.90	0.268	7 19 40.0	0.82	17 41.8	18	13 36 20.85	0.242	7 11 38.0	2.07	15 40.0
19	13 36 18.14	0.252	7 19 58.7	0.73	17 38.0	19	13 36 14.88	0.257	7 10 47.4	2.15	15 35.9
20	13 36 23.99	0.236	7 20 15.1	0.63	17 34.2	20	13 36 8.54	0.272	7 9 54.8	2.23	15 31.9
21	13 36 29.45	+0.220	−7 20 29.3	−0.54	17 30.3	21	13 36 1.83	−0.287	−7 9 0.3	+2.31	15 27.8
22	13 36 34.52	0.203	7 20 41.1	0.44	17 26.5	22	13 35 54.76	0.302	7 8 3.7	2.39	15 23.8
23	13 36 39.19	0.187	7 20 50.6	0.34	17 22.6	23	13 35 47.33	0.317	7 7 5.2	2.47	15 19.7
24	13 36 43.47	0.171	7 20 57.8	0.25	17 18.8	24	13 35 39.55	0.332	7 6 4.9	2.55	15 15.7
25	13 36 47.35	0.154	7 21 2.7	0.15	17 14.9	25	13 35 31.41	0.347	7 5 2.7	2.63	15 11.6
26	13 36 50.84	+0.137	−7 21 5.3	−0.06	17 11.0	26	13 35 22.93	−0.361	−7 3 58.6	+2.71	15 7.5
27	13 36 53.92	0.120	7 21 5.6	+0.04	17 7.1	27	13 35 14.09	0.375	7 2 52.7	2.79	15 3.4
28	13 36 56.61	0.104	7 21 3.5	0.14	17 3.2	28	13 35 4.92	0.389	7 1 45.0	2.86	14 59.3
29	13 36 58.90	0.087	7 20 59.2	0.23	16 59.3	29	13 34 55.41	0.403	7 0 35.5	2.93	14 55.3
30	13 37 0.78	0.070	7 20 52.5	0.33	16 55.4	30	13 34 45.58	0.417	6 59 24.3	3.00	14 51.2
31	13 37 2.26	+0.054	−7 20 43.5	+0.42	16 51.5	31	13 34 35.41	−0.430	−6 58 11.4	+3.07	14 47.1
32	13 37 3.34	+0.037	−7 20 32.2	+0.52	16 47.6	32	13 34 24.92	−0.443	−6 56 56.8	+3.14	14 42.9

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	7″.9	8″.1	8″.2	8″.3	Polar Semidiameter . .	8″.4	8″.5	8″.6	8″.7
Horizontal Parallax . .	0.9	0.9	0.9	0.9	Horizontal Parallax . .	1.0	1.0	1.0	1.0

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

MARCH.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 34 55.41	−0.403	−7 0 35.5	+2.93	14 55.3
2	13 34 45.58	0.417	6 59 24.3	3.00	14 51.2
3	13 34 35.41	0.430	6 58 11.4	3.07	14 47.1
4	13 34 24.92	0.443	6 56 56.8	3.14	14 42.9
5	13 34 14.12	0.456	6 55 40.6	3.21	14 38.8
6	13 34 3.01	−0.469	−6 54 22.8	+3.28	14 34.7
7	13 33 51.59	0.482	6 53 3.4	3.34	14 30.6
8	13 33 39.88	0.494	6 51 42.5	3.40	14 26.5
9	13 33 27.87	0.506	6 50 20.2	3.46	14 22.3
10	13 33 15.58	0.518	6 48 56.4	3.52	14 18.2
11	13 33 3.02	−0.529	−6 47 31.3	+3.58	14 14.0
12	13 32 50.18	0.540	6 46 4.9	3.63	14 9.9
13	13 32 37.09	0.551	6 44 37.2	3.68	14 5.8
14	13 32 23.74	0.561	6 43 8.2	3.73	14 1.6
15	13 32 10.14	0.571	6 41 38.0	3.78	13 57.4
16	13 31 56.30	−0.581	−6 40 6.7	+3.83	13 53.3
17	13 31 42.23	0.591	6 38 34.4	3.88	13 49.1
18	13 31 27.93	0.600	6 37 0.9	3.92	13 44.9
19	13 31 13.42	0.609	6 35 26.4	3.96	13 40.8
20	13 30 58.70	0.618	6 33 51.0	4.00	13 36.6
21	13 30 43.77	−0.626	−6 32 14.7	+4.04	13 32.4
22	13 30 28.66	0.634	6 30 37.6	4.07	13 28.2
23	13 30 13.35	0.642	6 28 59.5	4.10	13 24.0
24	13 29 57.86	0.649	6 27 20.8	4.13	13 19.9
25	13 29 42.20	0.656	6 25 41.3	4.16	13 15.7
26	13 29 26.38	−0.663	−6 24 1.2	+4.19	13 11.5
27	13 29 10.41	0.669	6 22 20.4	4.21	13 7.3
28	13 28 54.29	0.675	6 20 39.0	4.23	13 3.1
29	13 28 38.03	0.680	6 18 57.1	4.25	12 58.9
30	13 28 21.64	0.685	6 17 14.8	4.27	12 54.7
31	13 28 5.12	−0.690	−6 15 32.0	+4.29	12 50.5
32	13 27 48.50	−0.695	−6 13 48.9	+4.30	12 46.2

APRIL.

Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	Noon.	Noon.	Noon.	
	h m s	s	° ′ ″	″	h m
1	13 27 48.50	−0.695	−6 13 48.9	+4.30	12 46.2
2	13 27 31.77	0.699	6 12 5.6	4.31	12 42.0
3	13 27 14.95	0.703	6 10 21.9	4.31	12 37.8
4	13 26 58.04	0.706	6 8 38.0	4.32	12 33.6
5	13 26 41.06	0.709	6 6 54.1	4.32	12 29.4
6	13 26 24.01	−0.711	−6 5 10.1	+4.33	12 25.2
7	13 26 6.91	0.713	6 3 26.0	4.33	12 21.0
8	13 25 49.77	0.715	6 1 41.9	4.32	12 16.8
9	13 25 32.58	0.716	5 59 58.1	4.32	12 12.5
10	13 25 15.37	0.717	5 58 14.4	4.31	12 8.3
11	13 24 58.15	−0.718	−5 56 30.9	+4.30	12 4.1
12	13 24 40.92	0.718	5 54 47.6	4.29	11 59.9
13	13 24 23.69	0.718	5 53 4.8	4.27	11 55.7
14	13 24 6.47	0.717	5 51 22.4	4.25	11 51.5
15	13 23 49.27	0.716	5 49 40.3	4.23	11 47.2
16	13 23 32.10	−0.715	−5 47 58.7	+4.21	11 43.0
17	13 23 14.97	0.713	5 46 17.7	4.19	11 38.8
18	13 22 57.88	0.711	5 44 37.3	4.17	11 34.6
19	13 22 40.85	0.708	5 42 57.5	4.14	11 30.4
20	13 22 23.89	0.705	5 41 18.4	4.11	11 26.2
21	13 22 7.00	−0.702	−5 39 40.1	+4.08	11 21.9
22	13 21 50.18	0.699	5 38 2.6	4.05	11 17.7
23	13 21 33.46	0.695	5 36 26.0	4.01	11 13.5
24	13 21 16.83	0.691	5 34 50.1	3.97	11 9.3
25	13 21 0.31	0.686	5 33 15.3	3.93	11 5.1
26	13 20 43.90	−0.681	−5 31 41.5	+3.89	11 0.9
27	13 20 27.62	0.676	5 30 8.6	3.85	10 56.7
28	13 20 11.46	0.670	5 28 36.8	3.80	10 52.5
29	13 19 55.44	0.664	5 27 6.2	3.75	10 48.3
30	13 19 39.57	0.658	5 25 36.8	3.70	10 44.1
31	13 19 23.85	−0.651	−5 24 8.6	+3.65	10 39.9
32	13 19 8.30	−0.644	−5 22 41.6	+3.59	10 35.7

Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	8″.8	8″.9	8″.9	9″.0
Horizontal Parallax . .	1.0	1.0	1.0	1.0

Day of the Month.	7th.	15th.	23d.	31st.
Polar Semidiameter .	9″.0	9″.0	9″.0	8″.9
Horizontal Parallax .	1.0	1.0	1.0	1.0

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

	MAY.						JUNE.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	13 19 23.85	−0.651	−5 24 8.6	+3.65	10 39.9	1	13 13 12.10	−0.311	−4 52 21.0	+1.28	8 31.9
2	13 19 8.30	0.644	5 22 41.6	3.59	10 35.7	2	13 13 4.80	0.297	4 51 51.2	1.19	8 27.9
3	13 18 52.92	0.636	5 21 16.0	3.53	10 31.5	3	13 12 57.84	0.283	4 51 23.7	1.10	8 23.8
4	13 18 37.72	0.628	5 19 51.8	3.47	10 27.4	4	13 12 51.22	0.269	4 50 58.5	1.01	8 19.8
5	13 18 22.71	0.620	5 18 29.0	3.41	10 23.2	5	13 12 44.95	0.254	4 50 35.6	0.92	8 15.8
6	13 18 7.89	−0.612	−5 17 7.7	+3.35	10 19.0	6	13 12 39.03	−0.239	−4 50 14.9	+0.82	8 11.7
7	13 17 53.28	0.604	5 15 47.9	3.29	10 14.8	7	13 12 33.47	0.225	4 49 56.5	0.73	8 7.7
8	13 17 38.88	0.595	5 14 29.6	3.22	10 10.7	8	13 12 28.26	0.210	4 49 40.5	0.63	8 3.7
9	13 17 24.70	0.586	5 13 12.9	3.15	10 6.5	9	13 12 23.41	0.195	4 49 26.7	0.54	7 59.7
10	13 17 10.74	0.577	5 11 57.9	3.08	10 2.3	10	13 12 18.92	0.180	4 49 15.2	0.44	7 55.7
11	13 16 57.02	−0.567	−5 10 44.6	+3.01	9 58.2	11	13 12 14.78	−0.165	−4 49 6.0	+0.34	7 51.7
12	13 16 43.53	0.557	5 9 32.9	2.94	9 54.0	12	13 12 11.01	0.150	4 48 59.1	0.25	7 47.7
13	13 16 30.29	0.547	5 8 23.0	2.87	9 49.9	13	13 12 7.60	0.135	4 48 54.6	0.15	7 43.7
14	13 16 17.30	0.536	5 7 14.8	2.80	9 45.7	14	13 12 4.55	0.120	4 48 52.3	+0.06	7 39.7
15	13 16 4.57	0.525	5 6 8.5	2.73	9 41.6	15	13 12 1.87	0.105	.4 48 52.3	−0.04	7 35.8
16	13 15 52.10	−0.514	−5 5 4.0	+2.65	9 37.5	16	13 11 59.55	−0.089	−4 48 54.7	−0.14	7 31.8
17	13 15 39.89	0.503	5 4 1.3	2.57	9 33.3	17	13 11 57.60	0.074	4 48 59.3	0.23	7 27.8
18	13 15 27.96	0.492	5 3 0.5	2.49	9 29.2	18	13 11 56.01	0.059	4 49 6.2	0.33	7 23.9
19	13 15 16.31	0.480	5 2 1.6	2.41	9 25.1	19	13 11 54.79	0.044	4 49 15.5	0.43	7 19.9
20	13 15 4.94	0.468	5 1 4.7	2.33	9 21.0	20	13 11 53.93	0.029	4 49 27.0	0.52	7 16.0
21	13 14 53.85	−0.456	−5 0 9.8	+2.25	9 16.8	21	13 11 53.44	−0.013	−4 49 40.8	−0.62	7 12.0
22	13 14 43.06	0.444	4 59 16.8	2.17	9 12.7	22	13 11 53.33	+0.002	4 49 56.9	0.72	7 8.1
23	13 14 32.55	0.432	4 58 25.8	2.09	9 8.6	23	13 11 53.57	0.017	4 50 15.3	0.81	7 4.2
24	13 14 22.35	0.419	4 57 36.9	2.01	9 4.5	24	13 11 54.19	0.032	4 50 36.0	0.91	7 0.3
25	13 14 12.45	0.406	4 56 50.0	1.92	9 0.4	25	13 11 55.18	0.048	4 50 59.0	1.00	6 56.3
26	13 14 2.87	−0.393	−4 56 5.1	+1.83	8 56.4	26	13 11 56.53	+0.064	−4 51 24.2	−1.10	6 52.4
27	13 13 53.60	0.380	4 55 22.4	1.74	8 52.3	27	13 11 58.26	0.079	4 51 51.7	1.19	6 48.5
28	13 13 44.65	0.367	4 54 41.8	1.65	8 48.2	28	13 12 0.35	0.095	4 52 21.5	1.29	6 44.7
29	13 13 36.01	0.353	4 54 3.3	1.56	8 44.1	29	13 12 2.81	0.110	4 52 53.4	1.38	6 40.8
30	13 13 27.71	0.339	4 53 27.0	1.47	8 40.1	30	13 12 5.64	0.126	4 53 27.9	1.48	6 36.9
31	13 13 19.74	−0.325	−4 52 52.9	+1.38	8 36.0	31	13 12 8.84	+0.141	−4 54 4.4	−1.57	6 33.0
32	13 13 12.10	−0.311	−4 52 21.0	+1.28	8 31.9	32	13 12 12.41	+0.157	−4 54 43.2	−1.66	6 29.1

Day of the Month.	1st.	9th.	17th.	25th.	Day of the Month.	2d.	10th.	18th.	26th.
Polar Semidiameter . .	8″.9	8″.9	8″.8	8″.7	Polar Semidiameter . .	8″.6	8″.5	8″.4	8″.3
Horizontal Parallax . .	1.0	1.0	1.0	1.0	Horizontal Parallax . .	1.0	1.0	0.9	0.9

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

JULY.						AUGUST.					
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	13 12 8.84	+0.141	−4 54 4.4	−1.57	6 33.0	1	13 16 42.89	+0.582	−5 30 13.5	−4.14	4 35.7
2	13 12 12.41	0.157	4 54 43.2	1.66	6 29.1	2	13 16 57.02	0.595	5 31 53.8	4.21	4 32.0
3	13 12 16.35	0.172	4 55 24.2	1.76	6 25.3	3	13 17 11.45	0.608	5 33 35.7	4.28	4 28.3
4	13 12 20.65	0.187	4 56 7.5	1.85	6 21.4	4	13 17 26.18	0.620	5 35 19.3	4.35	4 24.6
5	13 12 25.32	0.202	4 56 53.0	1.94	6 17.5	5	13 17 41.21	0.632	5 37 4.6	4.42	4 20.9
6	13 12 30.36	+0.217	−4 57 40.7	−2.03	6 13.7	6	13 17 56.54	+0.644	−5 38 51.5	−4.49	4 17.2
7	13 12 35.75	0.232	4 58 30.5	2.12	6 9.8	7	13 18 12.15	0.656	5 40 39.9	4.56	4 13.5
8	13 12 41.51	0.247	4 59 22.6	2.21	6 6.0	8	13 18 28.05	0.668	5 42 29.9	4.62	4 9.8
9	13 12 47.63	0.262	5 0 16.7	2.30	6 2.2	9	13 18 44.25	0.680	5 44 21.4	4.68	4 6.2
10	13 12 54.11	0.277	5 1 13.0	2.39	5 58.4	10	13 19 0.72	0.692	5 46 14.4	4.74	4 2.5
11	13 13 0.94	+0.292	−5 2 11.4	−2.48	5 54.5	11	13 19 17.47	+0.704	−5 48 8.8	−4.80	3 58.9
12	13 13 8.13	0.307	5 3 11.9	2.57	5 50.7	12	13 19 34.49	0.715	5 50 4.7	4.86	3 55.2
13	13 13 15.67	0.322	5 4 14.5	2.66	5 46.9	13	13 19 51.78	0.726	5 52 2.1	4.92	3 51.6
14	13 13 23.55	0.337	5 5 19.1	2.74	5 43.1	14	13 20 9.34	0.737	5 54 0.8	4.98	3 47.9
15	13 13 31.79	0.351	5 6 25.8	2.82	5 39.3	15	13 20 27.17	0.748	5 56 0.9	5.03	3 44.3
16	13 13 40.37	+0.365	−5 7 34.5	−2.90	5 35.5	16	13 20 45.25	+0.759	−5 58 2.3	−5.09	3 40.7
17	13 13 49.29	0.379	5 8 45.1	2.99	5 31.7	17	13 21 3.60	0.770	6 0 5.1	5.15	3 37.1
18	13 13 58.56	0.393	5 9 57.8	3.07	5 27.9	18	13 21 22.20	0.781	6 2 9.2	5.20	3 33.4
19	13 14 8.16	0.407	5 11 12.4	3.15	5 24.1	19	13 21 41.05	0.791	6 4 14.6	5.25	3 29.8
20	13 14 18.10	0.421	5 12 29.0	3.23	5 20.4	20	13 22 0.15	0.801	6 6 21.2	5.30	3 26.2
21	13 14 28.37	+0.435	−5 13 47.5	−3.31	5 16.6	21	13 22 19.50	+0.811	−6 8 29.1	−5.35	3 22.6
22	13 14 38.98	0.449	5 15 7.9	3.39	5 12.9	22	13 22 39.10	0.821	6 10 38.2	5.40	3 19.0
23	13 14 49.92	0.463	5 16 30.2	3.47	5 9.1	23	13 22 58.93	0.831	6 12 48.4	5.45	3 15.4
24	13 15 1.18	0.477	5 17 54.4	3.55	5 5.4	24	13 23 18.99	0.841	6 14 59.9	5.50	3 11.8
25	13 15 12.78	0.490	5 19 20.5	3.63	5 1.6	25	13 23 39.30	0.851	6 17 12.5	5.55	3 8.2
26	13 15 24.70	+0.503	−5 20 48.4	−3.70	4 57.9	26	13 23 59.84	+0.861	−6 19 26.3	−5.60	3 4.6
27	13 15 36.94	0.517	5 22 18.1	3.78	4 54.2	27	13 24 20.60	0.870	6 21 41.1	5.64	3 1.0
28	13 15 49.50	0.530	5 23 49.7	3.86	4 50.5	28	13 24 41.58	0.879	6 23 57.0	5.68	2 57.4
29	13 16 2.38	0.543	5 25 23.0	3.93	4 46.8	29	13 25 2.80	0.888	6 26 14.0	5.72	2 53.9
30	13 16 15.57	0.556	5 26 58.1	4.00	4 43.1	30	13 25 24.22	0.897	6 28 32.0	5.76	2 50.3
31	13 16 29.07	+0.569	−5 28 34.9	−4.07	4 39.4	31	13 25 45.86	+0.906	−6 30 51.0	−5.80	2 46.7
32	13 16 42.89	+0.582	−5 30 13.5	−4.14	4 35.7	32	13 26 7.71	+0.915	−6 33 11.0	−5.84	2 43.1

Day of the Month.	4th.	12th.	20th.	28th.	Day of the Month.	5th.	13th.	21st.	29th.
Polar Semidiameter . .	8.2″	8.1″	8.0″	7.9″	Polar Semidiameter . .	7.8″	7.7″	7.6″	7.5″
Horizontal Parallax . .	0.9	0.9	0.9	0.9	Horizontal Parallax . .	0.9	0.9	0.9	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

SEPTEMBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 26 7.71	+0.915	−6 33 11.0	−5.84	2 43.1
2	13 26 29.77	0.924	6 35 31.9	5.88	2 39.6
3	13 26 52.03	0.932	6 37 53.7	5.92	2 36.0
4	13 27 14.49	0.940	6 40 16.4	5.96	2 32.5
5	13 27 37.14	0.948	6 42 40.0	6.00	2 28.9
6	13 27 59.99	+0.956	−6 45 4.4	−6.04	2 25.4
7	13 28 23.02	0.964	6 47 29.6	6.07	2 21.8
8	13 28 46.23	0.971	6 49 55.6	6.10	2 18.3
9	13 29 9.62	0.978	6 52 22.3	6.13	2 14.7
10	13 29 33.18	0.985	6 54 49.7	6.16	2 11.2
11	13 29 56.92	+0.992	−6 57 17.8	−6.19	2 7.6
12	13 30 20.82	0.999	6 59 46.6	6.22	2 4.1
13	13 30 44.88	1.006	7 2 16.1	6.25	2 0.6
14	13 31 9.11	1.013	7 4 46.1	6.27	1 57.1
15	13 31 33.50	1.020	7 7 16.8	6.30	1 53.5
16	13 31 58.03	+1.026	−7 9 48.0	−6.32	1 50.0
17	13 32 22.72	1.032	7 12 19.8	6.34	1 46.5
18	13 32 47.56	1.038	7 14 52.1	6.36	1 43.0
19	13 33 12.54	1.044	7 17 24.9	6.38	1 39.4
20	13 33 37.65	1.050	7 19 58.2	6.40	1 35.9
21	13 34 2.90	+1.056	−7 22 32.0	−6.42	1 32.4
22	13 34 28.29	1.061	7 25 6.2	6.44	1 28.9
23	13 34 53.81	1.066	7 27 40.8	6.46	1 25.4
24	13 35 19.45	1.071	7 30 15.8	6.47	1 21.9
25	13 35 45.21	1.076	7 32 51.1	6.49	1 18.4
26	13 36 11.10	+1.081	−7 35 26.8	−6.50	1 14.9
27	13 36 37.10	1.086	7 38 2.8	6.51	1 11.4
28	13 37 3.21	1.090	7 40 39.0	6.52	1 7.9
29	13 37 29.42	1.094	7 43 15.5	6.53	1 4.4
30	13 37 55.73	1.098	7 45 52.3	6.54	1 0.9
31	13 38 22.15	+1.102	−7 48 29.2	−6.55	0 57.4
32	13 38 48.65	+1.106	−7 51 6.3	−6.55	0 53.9

OCTOBER.

Day of Month.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Hour. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Hour. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m
1	13 38 22.15	+1.102	−7 48 29.2	−6.55	0 57.4
2	13 38 48.65	1.106	7 51 6.3	6.55	0 53.9
3	13 39 15.24	1.110	7 53 43.6	6.56	0 50.4
4	13 39 41.92	1.113	7 56 20.9	6.56	0 46.9
5	13 40 8.68	1.116	7 58 58.3	6.56	0 43.5
6	13 40 35.51	+1.119	−8 1 35.8	−6.56	0 40.0
7	13 41 2.42	1.122	8 4 13.3	6.56	0 36.5
8	13 41 29.39	1.125	8 6 50.9	6.56	0 33.0
9	13 41 56.43	1.128	8 9 28.4	6.56	0 29.6
10	13 42 23.52	1.130	8 12 5.8	6.55	0 26.1
11	13 42 50.67	+1.132	−8 14 43.2	−6.55	0 22.6
12	13 43 17.88	1.134	8 17 20.5	6.55	0 19.1
13	13 43 45.13	1.136	8 19 57.7	6.54	0 15.6
14	13 44 12.42	1.138	8 22 34.7	6.54	0 12.1
15	13 44 39.76	1.140	8 25 11.5	6.53	0 8.6
16	13 45 7.13	+1.142	−8 27 48.3	−6.53	0 5.1
17	13 45 34.54	1.143	8 30 24.8	6.52	0 1.6 23 58.1
18	13 46 1.97	1.144	8 33 1.0	6.51	23 54.6
19	13 46 29.43	1.145	8 35 37.1	6.50	23 51.2
20	13 46 56.92	1.145	8 38 12.8	6.49	23 47.7
21	13 47 24.42	+1.146	−8 40 48.3	−6.48	23 44.2
22	13 47 51.94	1.146	8 43 23.4	6.47	23 40.7
23	13 48 19.46	1.147	8 45 58.2	6.45	23 37.3
24	13 48 46.99	1.147	8 48 32.6	6.43	23 33.8
25	13 49 14.52	1.147	8 51 6.6	6.41	23 30.3
26	13 49 42.05	+1.146	−8 53 40.2	−6.39	23 26.8
27	13 50 9.56	1.146	8 56 13.4	6.37	23 23.4
28	13 50 37.07	1.145	8 58 46.0	6.35	23 19.9
29	13 51 4.56	1.145	9 1 18.2	6.33	23 16.4
30	13 51 32.02	1.144	9 3 49.8	6.31	23 12.9
31	13 51 59.46	+1.143	−9 6 20.9	−6.29	23 9.5
32	13 52 26.87	+1.142	−9 8 51.4	−6.27	23 6.1

Day of the Month.	6th.	14th.	22d.	30th.
Polar Semidiameter . .	7″.4	7″.4	7″.4	7″.3
Horizontal Parallax . .	0.8	0.8	0.8	0.8

Day of the Month.	8th.	16th.	24th.	32d.
Polar Semidiameter . . .	7″.3	7″.3	7″.3	7″.3
Horizontal Parallax . . .	0.8	0.8	0.8	0.8

NOTE.—The sign + indicates north declinations; the sign — indicates south declinations.

GREENWICH MEAN TIME.

	NOVEMBER.						DECEMBER.				
Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.	Day of Month.	Apparent Right Ascension.	Var. of R. A. for 1 Hour.	Apparent Declination.	Var. of Decl. for 1 Hour.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
1	13 52 26.87	+1.142	− 9 8 51.4	−6.27	23 6.1	1	14 5 32.63	+1.013	−10 17 42.2	−5.08	21 21.2
2	13 52 54.24	1.140	9 11 21.3	6.24	23 2.6	2	14 5 56.87	1.006	10 19 43.4	5.03	21 17.6
3	13 53 21.57	1.138	9 13 50.5	6.21	22 59.1	3	14 6 20.93	0.999	10 21 43.4	4.97	21 14.1
4	13 53 48.85	1.136	9 16 19.1	6.18	22 55.6	4	14 6 44.81	0.991	10 23 42.0	4.92	21 10.5
5	13 54 16.08	1.134	9 18 47.0	6.15	22 52.2	5	14 7 8.50	0.983	10 25 39.3	4.87	21 7.0
6	13 54 43.26	+1.132	− 9 21 14.2	−6.12	22 48.7	6	14 7 32.01	+0.975	−10 27 35.2	−4.81	21 3.4
7	13 55 10.38	1.129	9 23 40.6	6.09	22 45.2	7	14 7 55.32	0.967	10 29 29.7	4.75	20 59.9
8	13 55 37.44	1.126	9 26 6.3	6.06	22 41.7	8	14 8 18.43	0.959	10 31 22.9	4.69	20 56.3
9	13 56 4.43	1.123	9 28 31.3	6.03	22 38.2	9	14 8 41.33	0.950	10 33 14.6	4.63	20 52.8
10	13 56 31.35	1.120	9 30 55.4	6.00	22 34.7	10	14 9 4.03	0.941	10 35 4.9	4.57	20 49.2
11	13 56 58.19	+1.117	− 9 33 18.8	−5.96	22 31.2	11	14 9 26.52	+0.932	−10 36 53.8	−4.51	20 45.7
12	13 57 24.96	1.114	9 35 41.3	5.92	22 27.7	12	14 9 48.80	0.923	10 38 41.3	4.45	20 42.1
13	13 57 51.64	1.110	9 38 2.9	5.88	22 24.2	13	14 10 10.85	0.914	10 40 27.2	4.38	20 38.5
14	13 58 18.24	1.106	9 40 23.7	5.85	22 20.7	14	14 10 32.68	0.905	10 42 11.7	4.32	20 34.9
15	13 58 44.74	1.102	9 42 43.6	5.81	22 17.2	15	14 10 54.29	0.895	10 43 54.7	4.26	20 31.4
16	13 59 11.14	+1.098	− 9 45 2.6	−5.77	22 13.7	16	14 11 15.66	+0.885	−10 45 36.1	−4.19	20 27.8
17	13 59 37.45	1.094	9 47 20.6	5.73	22 10.2	17	14 11 36.80	0.875	10 47 16.0	4.13	20 24.2
18	14 0 3.65	1.090	9 49 37.7	5.69	22 6.7	18	14 11 57.69	0.865	10 48 54.4	4.06	20 20.6
19	14 0 29.74	1.085	9 51 53.8	5.65	22 3.2	19	14 12 18.34	0.855	10 50 31.1	4.00	20 17.0
20	14 0 55.72	1.080	9 54 8.9	5.61	21 59.7	20	14 12 38.74	0.845	10 52 6.3	3.93	20 13.4
21	14 1 21.58	+1.075	− 9 56 23.0	−5.57	21 56.2	21	14 12 58.88	+0.834	−10 53 39.8	−3.87	20 9.8
22	14 1 47.32	1.070	9 58 36.1	5.52	21 52.7	22	14 13 18.76	0.823	10 55 11.7	3.80	20 6.2
23	14 2 12.93	1.064	10 0 48.0	5.47	21 49.2	23	14 13 38.38	0.812	10 56 42.0	3.73	20 2.6
24	14 2 38.41	1.058	10 2 58.9	5.43	21 45.7	24	14 13 57.73	0.801	10 58 10.6	3.66	19 59.0
25	14 3 3.75	1.052	10 5 8.7	5.38	21 42.2	25	14 14 16.80	0.789	10 59 37.4	3.59	19 55.4
26	14 3 28.95	+1.046	−10 7 17.3	−5.33	21 38.7	26	14 14 35.59	+0.777	−11 1 2.6	−3.52	19 51.7
27	14 3 54.00	1.040	10 9 24.7	5.28	21 35.2	27	14 14 54.10	0.765	11 2 26.0	3.45	19 48.1
28	14 4 18.90	1.034	10 11 30.9	5.23	21 31.7	28	14 15 12.32	0.753	11 3 47.7	3.37	19 44.4
29	14 4 43.64	1.027	10 13 35.9	5.18	21 28.2	29	14 15 30.25	0.741	11 5 7.6	3.30	19 40.8
30	14 5 8.22	1.020	10 15 39.7	5.13	21 24.7	30	14 15 47.88	0.729	11 6 25.8	3.22	19 37.1
31	14 5 32.63	+1.013	−10 17 42.2	−5.08	21 21.2	31	14 16 5.21	+0.716	−11 7 42.1	−3.14	19 33.5
32	14 5 56.87	+1.006	−10 19 43.4	−5.03	21 17.6	32	14 16 22.23	+0.703	−11 8 56.7	−3.07	19 29.8

Day of the Month.	1st.	9th.	17th.	25th.
Polar Semidiameter . .	7″.3	7″.3	7″.4	7″.4
Horizontal Parallax . .	0.8	0.8	0.8	0.8

Day of the Month.	3d.	11th.	19th.	27th.	35th.
Polar Semidiameter . .	7″.4	7″.5	7″.6	7″.8	7″.9
Horizontal Parallax . .	0.8	0.8	0.9	0.9	0.9

The sign + prefixed to the hourly change of declination indicates that north declinations are increasing and south declinations are decreasing. The sign — indicates that north declinations are decreasing and south declinations increasing.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Day. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Day. Noon.	Meridian Passage.	Month and Day.	Apparent Right Ascension. Noon.	Var. of R. A. for 1 Day. Noon.	Apparent Declination. Noon.	Var. of Decl. for 1 Day. Noon.	Meridian Passage.
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 1	14 47 56.62	+ 9.757	−15 46 17.3	−43.04	20 0.3	July 4	14 36 11.62	− 3.130	−14 52 37.5	+12.98	7 45.0
5	14 48 34.29	9.072	15 49 3.0	39.80	19 45.2	8	14 36 0.65	2.349	14 51 52.9	9.28	7 29.1
9	14 49 9.14	8.349	15 51 35.5	36.42	19 30.0	12	14 35 52.84	1.554	14 51 23.3	5.51	7 13.2
13	14 49 41.04	7.593	15 53 54.3	32.94	19 14.8	16	14 35 48.24	− 0.750	14 51 8.9	+ 1.70	6 57.4
17	14 50 9.86	6.813	15 55 58.9	29.38	18 59.6	20	14 35 46.86	+ 0.062	14 51 9.8	− 2.14	6 41.7
21	14 50 35.51	+ 6.008	−15 57 49.2	−25.74	18 44.3	24	14 35 48.74	+ 0.879	−14 51 26.1	− 6.00	6 26.0
25	14 50 57.89	5.183	15 59 24.8	22.04	18 28.9	28	14 35 53.90	1.702	14 51 57.8	9.88	6 10.3
29	14 51 16.94	4.337	16 0 45.4	18.26	18 13.5	Aug. 1	14 36 2.35	2.526	14 52 45.1	13.76	5 54.7
Feb. 2	14 51 32.57	3.472	16 1 50.8	14.42	17 58.0	5	14 36 14.10	3.344	14 53 47.9	17.60	5 39.2
6	14 51 44.70	2.595	16 2 40.7	10.54	17 42.4	9	14 36 29.09	4.151	14 55 5.8	21.36	5 23.7
10	14 51 53.32	+ 1.710	−16 3 15.1	− 6.65	17 26.8	13	14 36 47.29	+ 4.943	−14 56 38.6	−25.03	5 8.3
14	14 51 58.39	+ 0.828	16 3 34.0	− 2.79	17 11.2	17	14 37 8.62	5.718	14 58 25.9	28.60	4 52.9
18	14 51 59.95	− 0.047	16 3 37.5	+ 1.03	16 55.5	21	14 37 33.02	6.478	15 0 27.3	32.07	4 37.6
22	14 51 58.03	0.914	16 3 25.8	4.81	16 39.7	25	14 38 0.42	7.221	15 2 42.4	35.45	4 22.4
26	14 51 52.65	1.771	16 2 59.0	8.54	16 23.9	29	14 38 30.75	7.944	15 5 10.8	38.72	4 7.2
Mar. 2	14 51 43.88	− 2.614	−16 2 17.5	+12.22	16 8.0	Sept. 2	14 39 3.93	+ 8.642	−15 7 51.9	−41.83	3 52.0
6	14 51 31.77	3.436	16 1 21.4	15.81	15 52.1	6	14 39 39.85	9.310	15 10 45.2	44.78	3 36.8
10	14 51 16.42	4.229	16 0 11.2	19.27	15 36.1	10	14 40 18.37	9.945	15 13 49.9	47.53	3 21.7
14	14 50 57.98	4.986	15 58 47.5	22.57	15 20.0	14	14 40 59.37	10.548	15 17 5.2	50.11	3 6.7
18	14 50 36.59	5.701	15 57 10.8	25.70	15 3.9	18	14 41 42.71	11.120	15 20 30.6	52.53	2 51.7
22	14 50 12.42	− 6.374	−15 55 22.1	+28.65	14 47.8	22	14 42 28.29	+11.661	−15 24 5.2	−54.77	2 36.7
26	14 49 45.65	7.005	15 53 21.8	31.44	14 31.6	26	14 43 15.96	12.168	15 27 48.5	56.84	2 21.8
30	14 49 16.44	7.588	15 51 10.8	34.03	14 15.4	30	14 44 5.58	12.637	15 31 39.7	58.70	2 6.9
Apr. 3	14 48 45.01	8.119	15 48 49.9	36.40	13 59.1	Oct. 4	14 44 56.99	13.062	15 35 37.8	60.34	1 52.0
7	14 48 11.57	8.589	15 46 20.0	38.50	13 42.8	8	14 45 50.02	13.444	15 39 42.0	61.75	1 37.2
11	14 47 36.38	− 8.995	−15 43 42.2	+40.32	13 26.5	12	14 46 44.49	+13.783	−15 43 51.5	−62.94	1 22.3
15	14 46 59.70	9.334	15 40 57.8	41.85	13 10.2	16	14 47 40.24	14.068	15 48 5.3	63.93	1 7.5
19	14 46 21.80	9.606	15 38 7.8	43.10	12 53.8	20	14 48 37.09	14.340	15 52 22.7	64.73	0 52.8
23	14 45 42.92	9.819	15 35 13.3	44.08	12 37.5	24	14 49 34.89	14.554	15 56 42.9	65.33	0 38.0
27	14 45 3.33	9.964	15 32 15.5	44.78	12 21.1	28	14 50 33.46	14.722	16 1 5.1	65.71	0 23.2
May 1	14 44 23.30	−10.043	−15 29 15.5	+45.17	12 4.7	Nov. 1	14 51 32.60	+14.839	−16 5 28.3	−65.83	0 8.5
5	14 43 43.08	10.049	15 26 14.6	45.23	11 48.3	5	14 52 32.11	14.906	16 9 51.4	65.72	23 50.0
9	14 43 3.00	9.982	15 23 14.1	44.96	11 31.9	9	14 53 31.79	14.924	16 14 13.8	65.42	23 35.3
13	14 42 23.32	9.846	15 20 15.3	44.36	11 15.5	13	14 54 31.44	14.895	16 18 34.5	64.92	23 20.6
17	14 41 44.32	9.645	15 17 19.6	43.46	10 59.2	17	14 55 30.89	14.822	16 22 52.8	64.22	23 5.8
21	14 41 6.24	− 9.383	−15 14 28.0	+42.28	10 42.8	21	14 56 29.95	+14.701	−16 27 8.0	−63.32	22 51.1
25	14 40 29.33	9.062	15 11 41.7	40.83	10 26.5	25	14 57 28.43	14.528	16 31 19.1	62.20	22 36.3
29	14 39 53.82	8.683	15 9 1.7	39.09	10 10.2	29	14 58 26.11	14.303	16 35 25.3	60.88	22 21.6
June 2	14 39 19.95	8.244	15 6 29.3	37.06	9 53.9	Dec. 3	14 59 22.79	14.026	16 39 25.8	59.34	22 6.8
6	14 38 47.95	7.748	15 4 5.6	34.75	9 37.6	7	15 0 18.25	13.700	16 43 19.8	57.63	21 51.9
10	14 38 18.03	− 7.200	−15 1 51.7	+32.19	9 21.4	11	15 1 12.33	+13.329	−16 47 6.6	−55.75	21 37.1
14	14 37 50.40	6.610	14 59 48.4	29.42	9 5.2	15	15 2 4.83	12.913	16 50 45.6	53.70	21 22.2
18	14 37 25.20	5.982	14 57 56.5	26.47	8 49.1	19	15 2 55.57	12.452	16 54 46.0	51.50	21 7.3
22	14 37 2.59	5.318	14 56 16.8	23.34	8 33.0	23	15 3 44.38	11.945	16 57 37.3	49.13	20 52.4
26	14 36 42.70	4.621	14 54 50.0	20.05	8 16.9	27	15 4 31.07	11.389	17 0 48.8	46.58	20 37.5
30	14 36 25.67	− 3.890	−14 53 36.7	+16.59	8 0.9	31	15 5 15.44	+10.788	−17 3 49.7	−43.87	20 22.5
July 4	14 36 11.62	− 3.130	−14 52 37.5	+12.98	7 45.0	35	15 5 57.32	+10.148	−17 6 39.6	−41.04	20 7.4

Greatest horizontal parallax,	May	8, 0″.50.	Greatest semidiameter,	May	8, 1″.90.
Least horizontal parallax,	November	7, 0″.45.	Least semidiameter,	November	7, 1″.71.

NEPTUNE, 1894.

GREENWICH MEAN TIME.

Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.	Month and Day.	Apparent Right Ascension.	Var. of R. A. for 1 Day.	Apparent Declination.	Var. of Decl. for 1 Day.	Meridian Passage.
	Noon.	*Noon.*	*Noon.*	*Noon.*			*Noon.*	*Noon.*	*Noon.*	*Noon.*	
	h m s	s	° ′ ″	″	h m		h m s	s	° ′ ″	″	h m
Jan. 1	4 40 16.56	−6.066	+20 37 0.7	− 9.61	9 54.1	July 4	4 52 50.40	+8.650	+21 5 44.9	+13.03	21 59.4
5	4 39 52.99	5.721	20 36 24.0	8.78	9 38.1	8	4 53 24.50	8.397	21 6 35.6	12.33	21 44.3
9	4 39 30.84	5.345	20 35 50.5	7.92	9 21.9	12	4 53 57.54	8.117	21 7 23.5	11.63	21 29.1
13	4 39 10.27	4.936	20 35 20.6	6.99	9 5.8	16	4 54 29.40	7.811	21 8 8.6	10.93	21 13.9
17	4 38 51.39	4.497	20 34 54.6	6.00	8 49.8	20	4 54 59.99	7.478	21 8 50.7	10.14	20 58.6
21	4 38 34.33	−4.029	+20 34 32.6	− 4.96	8 33.8	24	4 55 29.19	+7.118	+21 9 29.7	+ 9.35	20 43.4
25	4 38 19.19	3.537	20 34 14.9	3.88	8 17.8	28	4 55 56.90	6.733	21 10 5.5	8.53	20 28.1
29	4 38 6.07	3.022	20 34 1.6	2.76	8 1.9	Aug. 1	4 56 23.02	6.321	21 10 37.9	7.69	20 12.8
Feb. 2	4 37 55.04	2.486	20 33 52.8	1.61	7 46.0	5	4 56 47.44	5.885	21 11 7.0	6.86	19 57.5
6	4 37 46.20	1.934	20 33 48.7	− 0.45	7 30.1	9	4 57 10.07	5.427	21 11 32.8	6.01	19 42.1
10	4 37 39.59	−1.367	+20 33 49.2	+ 0.74	7 14.3	13	4 57 30.83	+4.949	+21 11 55.1	+ 5.14	19 26.7
14	4 37 35.28	0.788	20 33 54.6	1.94	6 58.5	17	4 57 49.64	4.455	21 12 13.9	4.27	19 11.3
18	4 37 33.29	−0.209	20 34 4.7	3.13	6 42.7	21	4 58 6.45	3.947	21 12 29.3	3.41	18 55.9
22	4 37 33.61	+0.370	20 34 19.6	4.30	6 27.0	25	4 58 21.19	3.420	21 12 41.2	2.54	18 40.4
26	4 37 36.25	0.952	20 34 39.1	5.44	6 11.3	29	4 58 33.79	2.877	21 12 49.6	1.66	18 24.9
Mar. 2	4 37 41.23	+1.536	+20 35 3.1	+ 6.58	5 55.7	Sept. 2	4 58 44.19	+2.322	+21 12 54.5	+ 0.79	18 9.3
6	4 37 48.53	2.114	20 35 31.7	7.71	5 40.1	6	4 58 52.36	1.761	21 12 55.9	− 0.08	17 53.7
10	4 37 58.13	2.683	20 36 4.8	8.79	5 24.5	10	4 58 58.27	1.193	21 12 53.9	0.93	17 38.1
14	4 38 9.98	3.241	20 36 42.0	9.79	5 9.0	14	4 59 1.90	0.622	21 12 48.5	1.78	17 22.4
18	4 38 24.04	3.784	20 37 23.1	10.75	4 53.5	18	4 59 3.25	+0.052	21 12 39.7	2.60	17 6.7
22	4 38 40.23	+4.310	+20 38 8.0	+11.69	4 38.1	22	4 59 2.32	−0.518	+21 12 27.7	− 3.40	16 50.9
26	4 38 58.50	4.820	20 38 56.6	12.58	4 22.6	26	4 58 59.11	1.084	21 12 12.5	4.20	16 35.1
30	4 39 18.77	5.312	20 39 48.6	13.39	4 7.2	30	4 58 53.65	1.648	21 11 54.1	4.98	16 19.3
Apr. 3	4 39 40.97	5.784	20 40 43.7	14.14	3 51.9	Oct. 4	4 58 45.94	2.200	21 11 32.7	5.71	16 3.4
7	4 40 5.01	6.234	20 41 41.7	14.82	3 36.5	8	4 58 36.07	2.734	21 11 8.4	6.42	15 47.5
11	4 40 30.81	+6.660	+20 42 42.3	+15.43	3 21.2	12	4 58 24.09	−3.250	+21 10 41.3	− 7.10	15 31.6
15	4 40 58.25	7.056	20 43 45.1	15.96	3 6.0	16	4 58 10.09	3.749	21 10 11.6	7.75	15 15.6
19	4 41 27.22	7.424	20 44 50.0	16.43	2 50.7	20	4 57 54.12	4.228	21 9 39.3	8.36	14 59.6
23	4 41 57.61	7.767	20 45 56.5	16.83	2 35.5	24	4 57 36.30	4.661	21 9 4.7	8.91	14 43.6
27	4 42 29.32	8.089	20 47 4.6	17.16	2 20.3	28	4 57 16.71	5.107	21 8 28.0	9.44	14 27.6
May 1	4 43 2.23	+8.370	+20 48 13.8	+17.41	2 5.1	Nov. 1	4 56 55.48	−5.501	+21 7 49.2	− 9.91	14 11.5
5	4 43 36.24	8.630	20 49 23.9	17.60	1 50.0	5	4 56 32.75	5.857	21 7 8.7	10.30	13 55.4
9	4 44 11.22	8.853	20 50 34.6	17.71	1 34.8	9	4 56 8.67	6.176	21 6 26.8	10.65	13 39.2
13	4 44 47.02	9.044	20 51 45.6	17.76	1 19.7	13	4 55 43.39	6.456	21 5 43.5	10.95	13 23.1
17	4 45 23.53	9.204	20 52 56.7	17.74	1 4.5	17	4 55 17.07	6.698	21 4 59.2	11.18	13 6.9
21	4 46 0.62	+9.333	+20 54 7.5	+17.65	0 49.4	21	4 54 49.86	−6.899	+21 4 14.1	−11.34	12 50.8
25	4 46 38.16	9.431	20 55 17.9	17.50	0 34.3	25	4 54 21.94	7.054	21 3 28.5	11.43	12 34.6
29	4 47 16.03	9.499	20 56 27.5	17.29	0 19.2	29	4 53 53.49	7.163	21 2 42.7	11.44	12 18.4
June 2	4 47 54.12	9.535	20 57 36.2	17.01	0 4.1	Dec. 3	4 53 24.70	7.223	21 1 57.0	11.38	12 2.2
6	4 48 32.27	9.536	20 58 43.6	16.69	23 45.3	7	4 52 55.77	7.234	21 1 11.7	11.24	11 46.0
10	4 49 10.36	+9.502	+20 59 49.7	+16.30	23 30.2	11	4 52 26.89	−7.199	+21 0 27.1	−11.03	11 29.7
14	4 49 48.24	9.435	21 0 54.0	15.86	23 15.1	15	4 51 58.24	7.117	20 59 43.5	10.74	11 13.5
18	4 50 25.80	9.340	21 1 56.6	15.39	22 59.9	19	4 51 30.01	6.993	20 59 1.2	10.38	10 57.3
22	4 51 2.92	9.215	21 2 57.1	14.85	22 44.8	23	4 51 2.36	6.821	20 58 20.5	9.94	10 41.2
26	4 51 39.48	9.057	21 3 55.4	14.29	22 29.7	27	4 50 35.50	6.602	20 57 41.7	9.43	10 25.0
30	4 52 15.34	+8.870	+21 4 51.4	+13.69	22 14.6	31	4 50 9.60	−6.340	+20 57 5.1	− 8.85	10 8.9
July 4	4 52 50.40	+8.650	+21 5 44.9	+13.03	21 59.4						

Greatest horizontal parallax,	December	3, 0″.31.	Greatest semidiameter,	December	3, 1″.33.
Least horizontal parallax,	June	4, 0″.29.	Least semidiameter,	June	4, 1″.25.

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 1	228 23 1.1	2 53 45.5	+ 0 35.4	−0 9 40.5	−21 20.3	9.6565994	0.1168097	0.1203594
3	234 6 46.7	2 50 9.7	3 8.6	0 51 46.1	20 44.4	9.6611878	0.1236935	0.1268207
5	239 44 17.5	2 47 30.2	5 31.6	1 32 34.9	20 3.6	9.6647178	0.1297467	0.1324778
7	245 17 22.6	2 45 43.5	7 40.1	2 11 57.7	19 18.5	9.6671969	0.1350201	0.1373784
9	250 47 45.3	2 44 47.6	9 30.4	2 49 46.2	18 29.2	9.6686314	0.1395573	0.1415608
11	256 17 5.7	2 44 41.0	+10 59.3	−3 25 51.7	−17 35.6	9.6690245	0.1433926	0.1450548
13	261 47 2.0	2 45 23.4	12 4.0	4 0 5.3	16 37.2	9.6683773	0.1465503	0.1478817
15	267 19 11.9	2 46 54.8	12 42.2	4 32 16.6	15 33.1	9.6666884	0.1490496	0.1500549
17	272 55 14.6	2 49 16.5	12 51.9	5 2 13.2	14 22.3	9.6639534	0.1508983	0.1515793
19	278 36 52.8	2 52 30.3	12 31.6	5 29 40.5	13 3.5	9.6601658	0.1520971	0.1524502
21	284 25 52.7	2 56 39.2	+11 40.8	−5 54 20.6	−11 34.8	9.6553180	0.1526366	0.1526543
23	290 24 8.7	3 1 46.6	10 18.1	6 15 51.8	9 54.2	9.6494018	0.1524997	0.1521682
25	296 33 41.0	3 7 56.4	8 25.4	6 33 47.6	7 59.0	9.6424123	0.1516556	0.1509565
27	302 56 39.8	3 15 14.0	6 4.4	6 47 36.0	5 46.3	9.6343484	0.1500643	0.1489716
29	309 35 25.9	3 23 44.9	3 18.9	6 56 38.8	3 12.7	9.6252183	0.1476702	0.1461510
31	316 32 31.8	3 33 34.5	+ 0 14.2	−7 0 10.2	− 0 14.4	9.6150454	0.1444045	0.1424200
Feb. 2	323 50 40.1	3 44 48.3	− 3 0.3	6 57 17.1	+ 3 12.6	9.6038746	0.1401836	0.1376818
4	331 32 43.7	3 57 30.2	6 12.7	6 46 58.7	7 11.4	9.5917841	0.1348996	0.1318207
6	339 41 40.7	4 11 42.1	9 7.0	6 28 8.6	11 44.5	9.5788987	0.1284272	0.1247004
8	348 20 30.0	4 27 21.3	11 24.1	5 59 37.8	16 51.4	9.5654063	0.1206194	0.1161628
10	357 31 57.0	4 44 17.3	−12 42.2	−5 20 22.4	+22 28.7	9.5515768	0.1113080	0.1060307
12	7 18 17.4	5 2 9.9	12 40.2	4 29 34.5	28 21.4	9.5377803	0.1003066	0.0941116
14	17 40 51.9	5 20 24.6	11 1.7	3 26 59.9	34 10.2	9.5245010	0.0874215	0.0802134
16	28 39 36.3	5 38 9.4	7 44.3	2 13 18.9	39 21.2	9.5123329	0.0724657	0.0641609
18	40 12 24.4	5 54 15.3	− 3 4.0	−0 50 28.7	43 11.8	9.5019504	0.0552846	0.0458279
20	52 14 39.0	6 7 21.4	+ 2 19.2	+0 38 3.9	+44 56.2	9.4940438	0.0357894	0.0251742
22	64 38 56.6	6 16 4.8	7 25.9	2 7 27.9	43 58.8	9.4892181	0.0139987	0.0022882
24	77 15 20.9	6 19 19.8	11 12.5	3 32 2.8	40 7.5	9.4878795	9.9900800	9.9774235
26	89 52 16.3	6 16 34.7	12 50.2	4 46 15.1	33 42.4	9.4901458	9.9643802	9.9510242
28	102 17 47.5	6 8 2.7	12 2.7	5 45 41.8	25 31.6	9.4958189	9.9374419	9.9237310
Mar. 2	114 21 11.3	5 54 40.2	+ 9 8.8	+6 27 52.3	+16 36.8	9.5044308	9.9100000	9.8963675
4	125 54 7.8	5 37 50.9	4 52.7	6 52 18.3	7 55.5	9.5153431	9.8829590	9.8699067
6	136 51 15.8	5 19 5.8	+ 0 5.8	7 0 11.1	+ 0 8.6	9.5278617	9.8573460	9.8454133
8	147 10 7.1	4 59 46.1	− 4 25.5	6 53 44.7	− 6 21.7	9.5413276	9.8342410	9.8239563
10	156 50 38.4	4 40 53.9	8 10.3	6 35 38.6	11 31.0	9.5551744	9.8146733	9.8064926
12	165 54 28.9	4 23 10.0	−10 51.3	+6 8 31.0	−15 24.8	9.5689474	9.7994948	9.7937378
14	174 24 20.2	4 6 58.0	12 24.1	5 34 42.9	18 13.5	9.5823055	9.7892559	9.7860579
16	182 23 29.8	3 52 28.4	12 52.2	4 56 12.4	20 9.2	9.5950000	9.7841265	9.7834227
18	189 55 22.8	3 39 40.8	12 24.2	4 14 33.6	21 23.6	9.6068620	9.7838861	9.7854411
20	197 3 19.7	3 28 32.7	11 10.3	3 30 59.4	22 5.9	9.6177804	9.7879994	9.7914660
22	203 50 35.9	3 18 58.0	− 9 21.3	+2 46 26.0	−22 24.3	9.6276868	9.7957414	9.8007263
24	210 20 8.7	3 10 48.5	7 7.3	2 1 34.0	22 25.1	9.6365420	9.8063234	9.8124420
26	216 34 42.0	3 3 57.0	4 37.8	1 16 54.6	22 12.4	9.6443281	9.8189953	9.8259059
28	222 36 44.3	2 58 16.7	− 2 0.4	+0 32 50.9	21 49.9	9.6510394	9.8331033	9.8405254
30	228 28 32.3	2 53 41.6	+ 0 37.8	−0 10 19.9	21 19.8	9.6566784	9.8481170	9.8558311
32	234 12 10.9	2 50 6.8	+ 3 10.9	−0 52 24.4	−20 43.8	9.6612508	9.8636264	9.8714680

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Apr. 1	234 12 10.9	2 50 6.8	+ 3 10.9	−0 52 24.4	−20 43.8	9.6612508	9.8636264	9.8714680
3	239 49 36.8	2 47 28.1	5 33.7	1 33 11.9	20 2.9	9.6647650	9.8793265	9.8871766
5	245 22 38.4	2 45 42.1	7 42.0	2 12 33.2	19 17.8	9.6672284	9.8949989	9.9027759
7	250 52 59.0	2 44 47.0	9 32.1	2 50 20.2	18 28.5	9.6686473	9.9104933	9.9181407
9	256 22 19.2	2 44 41.2	11 0.5	3 26 24.1	17 34.8	9.6690250	9.9257095	9.9331924
11	261 52 16.4	2 45 24.2	+12 4.8	−4 0 35.9	−16 36.2	9.6683623	9.9405835	9.9478799
13	267 24 28.8	2 46 56.4	12 42.6	4 32 45.1	15 32.0	9.6666577	9.9550775	9.9621740
15	273 0 35.7	2 49 18.9	12 51.8	5 2 39.3	14 21.2	9.6639069	9.9691685	9.9760591
17	278 42 19.2	2 52 33.5	12 31.1	5 30 4.4	13 2.3	9.6601034	9.9828453	9.9895259
19	284 31 26.5	2 56 43.3	11 39.5	5 54 41.7	11 33.4	9.6552394	9.9961007	0.0025695
21	290 29 51.4	3 1 51.4	+10 16.5	−6 16 9.8	− 9 52.6	9.6493069	0.0089309	0.0151843
23	296 39 34.1	3 8 2.3	8 23.5	6 34 2.1	7 57.1	9.6423010	0.0213286	0.0273618
25	303 2 45.8	3 15 20.7	6 2.1	6 47 46.5	5 44.1	9.6342206	0.0332829	0.0390878
27	309 41 47.2	3 23 53.0	3 16.1	6 56 44.6	3 10.1	9.6250743	0.0447748	0.0503396
29	316 39 10.5	3 33 43.8	+ 0 11.2	7 0 10.6	− 0 11.4	9.6148853	0.0557781	0.0610846
May 1	323 57 38.5	3 44 58.9	− 3 3.2	−6 57 11.2	+ 3 16.2	9.6036994	0.0662529	0.0712764
3	331 40 4.6	3 57 42.4	6 15.4	6 46 45.7	7 15.5	9.5915950	0.0761465	0.0808530
5	339 49 27.2	4 11 55.6	9 9.4	6 27 47.3	11 49.0	9.5786982	0.0853861	0.0897337
7	348 28 44.7	4 27 36.0	11 25.8	5 59 7.2	16 56.5	9.5651977	0.0938823	0.0978168
9	357 40 42.3	4 44 33.2	12 42.8	5 19 41.6	22 33.3	9.5513643	0.1015209	0.1049767
11	7 27 34.9	5 2 26.7	−12 39.1	−4 28 42.8	+28 26.7	9.5375709	0.1081649	0.1110651
13	17 50 43.2	5 20 41.4	10 59.6	3 25 57.9	34 15.2	9.5243028	0.1136550	0.1159132
15	28 50 0.3	5 38 25.3	7 40.1	2 12 7.4	39 25.5	9.5121556	0.1178162	0.1193413
17	40 23 18.6	5 54 29.8	− 2 59.3	−0 49 10.1	43 14.4	9.5018050	0.1204668	0.1211721
19	52 25 58.3	6 7 32.1	+ 2 24.2	+0 39 25.7	44 56.5	9.4939406	0.1214374	0.1212482
21	64 50 32.9	6 16 11.3	+ 7 30.2	+2 8 48.1	+43 56.8	9.4891650	0.1205915	0.1194587
23	77 27 5.0	6 19 21.0	11 15.0	3 33 16.1	40 2.1	9.4878810	0.1178464	0.1157549
25	90 3 56.8	6 16 30.2	12 50.6	4 47 16.8	33 35.6	9.4902014	0.1131899	0.1101612
27	102 29 14.2	6 7 53.4	12 0.9	5 46 28.6	25 23.6	9.4959234	0.1066823	0.1027712
29	114 32 15.3	5 54 27.0	9 5.3	6 28 22.8	16 28.7	9.5045754	0.0984476	0.0937336
31	126 4 42.6	5 37 35.1	+ 4 48.2	+6 52 32.8	+ 7 47.9	9.5155179	0.0886528	0.0832294
June 2	137 1 17.2	5 18 48.7	+ 0 1.4	7 0 11.3	+ 0 1.8	9.5280562	0.0774873	0.0714506
4	147 19 34.2	4 59 29.0	− 4 29.5	6 53 32.8	− 6 27.5	9.5415321	0.0651416	0.0585825
6	156 59 32.0	4 40 37.4	8 13.3	6 35 17.1	11 35.3	9.5553819	0.0517938	0.0447949
8	166 2 50.6	4 22 54.7	10 53.3	6 8 2.1	15 27.9	9.5691522	0.0376035	0.0302361
10	174 32 13.1	4 6 44.2	−12 24.9	+5 34 8.8	−18 15.6	9.5825020	0.0227074	0.0150324
12	182 30 56.0	3 52 15.5	12 52.2	4 55 34.6	20 10.7	9.5951857	0.0072225	9.9992905
14	190 2 24.5	3 39 29.8	12 23.4	4 13 53.5	21 24.4	9.6070347	9.9912471	9.9831029
16	197 10 1.9	3 28 23.4	11 8.9	3 30 18.2	22 6.4	9.6179387	9.9748677	9.9665504
18	203 57 0.4	3 18 49.8	9 19.4	2 45 43.8	22 24.6	9.6278300	9.9581606	9.9497074
20	210 26 18.3	3 10 41.5	− 7 5.2	+2 0 51.7	−22 25.0	9.6366696	9.9411995	9.9326470
22	216 40 38.5	3 3 51.1	4 35.2	1 16 12.7	22 12.2	9.6444398	9.9240587	9.9154467
24	222 42 30.1	2 58 11.9	− 1 57.2	+0 32 9.7	21 49.4	9.6511352	9.9068219	9.8981960
26	228 34 9.5	2 53 37.8	+ 0 40.3	−0 11 0.1	21 19.3	9.6567579	9.8895834	9.8809990
28	234 17 41.4	2 50 3.9	3 13.2	0 53 3.4	20 43.2	9.6613147	9.8724605	9.8639869
30	239 55 1.7	2 47 25.8	+ 5 35.8	−1 33 49.7	−20 2.3	9.6648132	9.8555990	9.8473214
32	245 27 59.9	2 45 40.8	+ 7 43.8	−2 13 9.6	−19 17.0	9.6672608	9.8391817	9.8312089

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 2	245 27 59.9	2 45 40.8	+ 7 43.8	−2 13 9.6	−19 17.0	9.6672608	9.8391817	9.8312089
4	250 58 19.3	2 44 46.6	9 33.5	2 50 55.0	18 27.6	9.6686637	9.8234376	9.8159045
6	256 27 39.2	2 44 41.4	11 1.6	3 26 57.2	17 33.8	9.6690255	9.8086503	9.8017197
8	261 57 37.5	2 45 25.0	12 5.5	4 1 7.1	16 35.2	9.6683470	9.7951607	9.7890247
10	267 29 52.1	2 46 58.1	12 43.0	4 33 14.2	15 31.0	9.6666263	9.7833662	9.7782414
12	273 6 3.6	2 49 21.6	+12 51.7	−5 3 6.5	−14 20.0	9.6638594	9.7737090	9.7698296
14	278 47 53.1	2 52 36.9	12 30.4	5 30 28.8	13 0.9	9.6600395	9.7666546	9.7642454
16	284 37 8.1	2 56 47.4	11 38.4	5 55 3.4	11 31.9	9.6551590	9.7626512	9.7619184
18	290 35 42.4	3 1 56.4	10 15.0	6 16 28.3	9 50.8	9.6492100	9.7620854	9.7631824
20	296 45 36.0	3 8 8.6	8 22.1	6 34 17.0	7 55.2	9.6421872	9.7652286	9.7682338
22	303 9 1.9	3 15 28.6	+ 5 59.6	−6 47 57.3	− 5 41.9	9.6340901	9.7721951	9.7770993
24	309 48 19.1	3 24 1.5	3 13.2	6 56 50.5	3 7.6	9.6249272	9.7829208	9.7896247
26	316 46 0.5	3 33 53.5	+ 0 8.3	7 0 11.0	− 0 8.7	9.6147221	9.7971657	9.8054906
28	324 4 49.3	3 45 9.9	− 3 6.2	6 57 5.1	+ 3 19.4	9.6035210	9.8145419	9.8242542
30	331 47 39.1	3 57 54.7	6 18.3	6 46 32.1	7 19.3	9.5914030	9.8345598	9.8453887
Aug. 1	339 57 28.1	4 12 9.3	− 9 11.9	−6 27 25.0	+11 53.4	9.5784946	9.8566707	9.8683349
3	348 37 14.6	4 27 51.0	11 27.5	5 58 35.6	17 1.4	9.5649862	9.8803109	9.8925296
5	357 49 43.5	4 44 49.3	12 43.4	5 18 59.5	22 38.6	9.5511502	9.9049244	9.9174292
7	7 37 9.4	5 2 43.5	12 38.5	4 27 50.0	28 32.3	9.5373604	9.9299802	9.9425160
9	18 0 51.4	5 20 58.2	10 57.1	3 24 53.9	34 20.5	9.5241043	9.9549764	9.9673029
11	29 0 41.5	5 38 41.5	− 7 36.8	−2 10 53.9	+39 30.2	9.5119790	9.9794403	9.9913345
13	40 34 29.8	5 54 43.6	− 2 54.4	−0 47 49.5	43 17.2	9.5016610	0.0029349	0.0141927
15	52 37 33.9	6 7 43.0	+ 2 29.2	+0 40 49.5	44 57.1	9.4938397	0.0250641	0.0355080
17	65 2 25.0	6 16 17.4	7 34.5	2 10 10.1	43 54.4	9.4891152	0.0454891	0.0549779
19	77 39 2.7	6 19 21.4	11 17.6	3 34 30.7	39 57.9	9.4878865	0.0639489	0.0723859
21	90 15 49.6	6 16 24.9	+12 50.9	+4 48 19.4	+33 28.7	9.4902617	0.0802775	0.0876185
23	102 40 51.1	6 7 42.6	11 59.1	5 47 15.9	25 15.6	9.4960332	0.0944106	0.1006604
25	114 43 27.4	5 54 12.2	9 1.7	6 28 53.5	16 20.3	9.5047259	0.1063801	0.1115846
27	126 15 23.5	5 37 17.6	+ 4 43.8	6 52 47.3	+ 7 40.2	9.5156983	0.1162939	0.1205289
29	137 11 22.9	5 18 30.6	− 0 2.5	7 0 11.3	− 0 4.4	9.5282563	0.1243119	0.1276666
Sept.31	147 29 4.6	4 59 11.2	− 4 33.4	+6 53 20.7	− 6 32.6	9.5417431	0.1306170	0.1331868
2	157 8 27.2	4 40 20.4	8 16.2	6 34 55.4	11 39.5	9.5555948	0.1353980	0.1372726
4	166 11 12.9	4 22 39.2	10 55.2	6 7 33.2	15 31.0	9.5693614	0.1388312	0.1400943
6	174 40 5.5	4 6 30.1	12 25.8	5 33 34.6	18 17.9	9.5827031	0.1410783	0.1418001
8	182 38 21.4	3 52 3.0	12 52.2	4 54 56.8	20 12.0	9.5953756	0.1422744	0.1425156
10	190 9 26.2	3 39 18.9	−12 22.6	+4 13 13.4	−21 25.3	9.6072111	0.1425357	0.1423457
12	197 16 43.1	3 28 13.8	11 7.4	3 29 36.7	22 6.9	9.6181003	0.1419555	0.1413738
14	204 3 23.4	3 18 42.1	9 17.0	2 45 1.7	22 24.7	9.6279755	0.1406084	0.1396657
16	210 32 26.4	3 10 34.7	7 2.8	2 0 9.7	22 24.9	9.6367991	0.1385515	0.1372705
18	216 46 34.0	3 3 45.2	4 32.8	1 15 31.0	22 11.9	9.6445528	0.1358268	0.1342235
20	222 48 15.0	2 58 7.2	− 1 55.2	+0 31 28.8	−21 49.0	9.6512314	0.1324630	0.1305472
22	228 39 46.1	2 53 34.1	+ 0 42.8	−0 11 40.2	21 18.8	9.6568379	0.1284771	0.1262532
24	234 23 11.5	2 50 1.0	3 15.5	0 53 42.4	20 42.4	9.6613780	0.1238753	0.1213429
26	240 0 27.4	2 47 23.8	5 37.9	1 34 27.3	20 1.6	9.6648600	0.1186549	0.1158093
28	245 33 22.0	2 45 39.6	7 45.7	2 13 45.9	19 16.3	9.6672914	0.1128041	0.1096364
30	251 3 39.4	2 44 46.1	+ 9 35.1	−2 51 29.7	−18 26.8	9.6686782	0.1063034	0.1028012
32	256 32 59.1	2 44 41.7	+11 2.8	−3 27 30.2	−17 33.0	9.6690234	0.0991258	0.0952730

MERCURY.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Oct. 2	256 32 59.1	2 44 41.7	+11 2.8	−3 27 30.2	−17 33.0	9.6690234	0.0991258	0.0952730
4	262 2 58.8	2 45 26.2	12 6.4	4 1 38.3	16 34.3	9.6683284	0.0912371	0.0870138
6	267 35 16.9	2 47 0.0	12 43.3	4 33 43.5	15 29.9	9.6665914	0.0825961	0.0779785
8	273 11 32.4	2 49 24.0	12 51.6	5 3 33.4	14 18.8	9.6638079	0.0731544	0.0681166
10	278 53 27.9	2 52 40.2	12 29.9	5 30 53.3	12 59.6	9.6599716	0.0628581	0.0573701
12	284 42 50.3	2 56 51.9	+11 37.8	−5 55 25.1	−11 30.4	9.6550743	0.0516455	0.0456756
14	290 41 34.6	3 2 2.0	10 13.5	6 16 46.8	9 49.1	9.6491087	0.0394521	0.0329668
16	296 51 40.4	3 8 14.9	8 19.5	6 34 31.8	7 53.2	9.6420691	0.0262107	0.0191765
18	303 15 19.6	3 15 35.9	5 57.2	6 48 7.9	5 39.7	9.6339554	0.0118567	0.0042442
20	309 54 52.8	3 24 10.1	3 10.5	6 56 56.4	3 5.0	9.6247761	9.9963342	9.9881235
22	316 52 52.6	3 34 3.4	+ 0 5.4	−7 0 11.2	− 0 5.4	9.6145553	9.9796110	9.9708008
24	324 12 2.7	3 45 21.2	− 3 9.2	6 56 58.8	+ 3 22.9	9.6033395	9.9616976	9.9523174
26	331 55 16.5	3 58 7.4	6 21.2	6 46 18.3	7 23.3	9.5912083	9.9426801	9.9328160
28	340 5 32.4	4 12 23.4	9 14.4	6 27 2.8	11 58.0	9.5782894	9.9227674	9.9125918
30	348 45 48.1	4 28 6.3	11 29.2	5 58 3.5	17 6.6	9.5647739	9.9023619	9.8921740
Nov. 1	357 58 48.8	4 45 5.7	−12 44.1	−5 18 16.9	+22 44.0	9.5509357	9.8821458	9.8724211
3	7 46 48.1	5 3 0.5	12 37.7	4 26 56.3	28 37.8	9.5371506	9.8631706	9.8545920
5	18 11 4.4	5 21 15.3	10 54.8	3 23 49.4	34 26.0	9.5239078	9.8469034	9.8403389
7	29 11 27.6	5 38 57.3	7 33.0	2 9 39.7	39 34.1	9.5118055	9.8351333	9.8315090
9	40 45 45.6	5 54 57.2	− 2 49.6	−0 46 28.3	43 19.4	9.5015213	9.8296559	9.8297094
11	52 49 13.7	6 7 53.3	+ 2 34.4	+0 42 13.8	+44 57.9	9.4937439	9.8317387	9.8357327
13	65 14 20.8	6 16 23.0	7 38.7	2 11 32.4	43 52.0	9.4890713	9.8416028	9.8491849
15	77 51 4.2	6 19 21.4	11 20.2	3 35 45.6	39 52.7	9.4878983	9.8582633	9.8685842
17	90 27 45.3	6 16 19.6	12 51.2	4 49 22.1	33 21.5	9.4903284	9.8798782	9.8918794
19	102 52 30.3	6 7 31.2	11 57.2	5 48 3.1	25 7.8	9.4961489	9.9043412	9.9170426
21	114 54 39.2	5 53 57.3	+ 8 58.2	+6 29 24.8	+16 11.9	9.5048817	9.9297952	9.9424443
23	126 26 5.3	5 37 1.2	+ 4 39.4	6 53 1.5	+ 7 32.0	9.5158838	9.9548678	9.9669721
25	137 21 29.9	5 18 12.6	− 0 7.5	7 0 11.0	− 0 11.1	9.5284606	9.9786886	9.9899708
27	147 38 35.3	4 58 53.1	4 37.3	6 53 8.3	6 38.0	9.5419567	0.0007886	0.0111253
29	157 17 22.3	4 40 3.2	8 19.2	6 34 33.5	11 43.6	9.5558099	0.0209752	0.0303411
Dec. 1	166 19 34.9	4 22 23.6	−10 57.1	+6 7 4.0	−15 34.1	9.5695720	0.0392309	0.0476566
3	174 47 58.0	4 6 15.7	12 27.4	5 33 0.2	18 20.0	9.5829046	0.0556329	0.0631769
5	182 45 46.1	3 51 50.0	12 52.1	4 54 18.9	20 13.6	9.5955649	0.0703067	0.0770399
7	190 16 27.2	3 39 7.8	12 21.7	4 12 33.2	21 26.1	9.6073865	0.0833943	0.0893881
9	197 23 23.2	3 28 4.3	11 5.9	3 28 55.3	22 7.3	9.6182600	0.0950380	0.1003606
11	204 9 46.0	3 18 33.4	− 9 15.4	+2 44 19.8	−22 24.8	9.6281189	0.1053716	0.1100850
13	210 38 33.4	3 10 27.5	7 0.5	1 59 27.7	22 24.8	9.6369257	0.1145146	0.1186733
15	216 52 28.0	3 3 39.5	4 30.3	1 14 49.5	22 11.6	9.6446626	0.1225729	0.1262242
17	222 53 58.8	2 58 2.5	− 1 52.7	+0 30 47.9	21 48.6	9.6513244	0.1296377	0.1328225
19	228 45 21.2	2 53 30.4	+ 0 45.2	−0 12 20.0	21 18.3	9.6569141	0.1357870	0.1385390
21	234 28 40.2	2 49 58.2	+ 3 17.9	−0 54 21.2	−20 42.0	9.6614377	0.1410856	0.1434336
23	240 5 51.4	2 47 21.9	5 40.0	1 35 4.9	20 0.9	9.6649031	0.1455879	0.1475537
25	245 38 43.0	2 45 38.4	7 47.5	2 14 22.0	19 15.5	9.6673181	0.1493364	0.1509393
27	251 8 58.8	2 44 45.7	9 36.6	2 52 4.1	18 26.0	9.6686889	0.1523662	0.1536194
29	256 38 18.6	2 44 42.2	11 4.0	3 28 3.1	17 32.2	9.6690180	0.1547019	0.1556151
31	262 8 19.8	2 45 27.4	+12 7.2	−4 2 9.4	−16 33.3	9.6683070	0.1563603	0.1569386
33	267 40 40.8	2 47 2.0	+12 43.7	−4 34 12.6	−15 28.8	9.6665540	0.1573501	0.1575948

VENUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
Jan. 1	73 22 18.9	1 36 41.1	−0 14.9	−0 8 23.5	+5 43.7	9.8577037	9.6827612	9.6699517
5	79 49 17.8	1 36 48.3	+0 25.7	+0 14 32.4	5 43.5	9.8574359	9.6569198	9.6436782
9	86 16 45.2	1 36 55.4	1 5.2	0 37 18.9	5 39.0	9.8571922	9.6302455	9.6166456
13	92 44 40.8	1 37 2.3	1 41.3	0 59 38.4	5 30.0	9.8569755	9.6029102	9.5890806
17	99 13 3.1	1 37 8.8	2 12.4	1 21 13.4	5 16.8	9.8567886	9.5752099	9.5613633
21	105 41 50.5	1 37 14.8	+2 36.7	+1 41 47.3	+4 59.5	9.8566340	9.5476200	9.5340743
25	112 11 0.8	1 37 20.2	2 53.0	2 1 3.9	4 38.2	9.8565136	9.5208334	9.5080206
29	118 40 31.0	1 37 24.8	3 0.5	2 18 48.1	4 13.3	9.8564292	9.4957742	9.4842472
Feb. 2	125 10 17.5	1 37 28.5	2 58.7	2 34 45.8	3 45.0	9.8563819	9.4736016	9.4640108
6	131 40 16.2	1 37 31.0	2 47.8	2 48 44.5	3 13.8	9.8563723	9.4556496	9.4486858
10	138 10 22.6	1 37 32.2	+2 28.2	+3 0 33.1	+2 40.1	9.8564001	9.4432790	9.4395635
14	144 40 31.6	1 37 32.1	2 1.1	3 10 2.5	2 4.3	9.8564656	9.4376410	9.4375717
18	151 10 37.4	1 37 30.7	1 28.0	3 17 5.3	1 26.9	9.8565678	9.4393651	9.4429851
22	157 40 35.1	1 37 27.9	0 50.2	3 21 36.2	0 48.4	9.8567052	9.4483453	9.4553232
26	164 10 18.8	1 37 23.7	+0 9.8	3 23 31.9	+0 9.4	9.8568760	9.4637613	9.4734847
Mar. 2	170 39 42.7	1 37 18.1	−0 30.9	+3 22 51.4	−0 29.6	9.8570779	9.4843111	9.4960614
6	177 8 41.8	1 37 11.3	1 10.1	3 19 35.4	1 8.2	9.8573085	9.5085625	9.5216568
10	183 37 11.4	1 37 3.3	1 45.8	3 13 47.1	1 45.7	9.8575644	9.5352028	9.5490765
14	190 5 6.6	1 36 54.2	2 15.9	3 5 31.5	2 21.7	9.8578425	9.5631705	9.5773931
18	196 32 24.2	1 36 44.4	2 39.2	2 54 55.6	2 55.8	9.8581391	9.5916658	9.6059217
22	202 59 1.2	1 36 34.0	−2 54.3	+2 42 8.1	−3 27.5	9.8584505	9.6201054	9.6341708
26	209 24 55.4	1 36 23.2	3 0.6	2 27 19.2	3 56.4	9.8587726	9.6480806	9.6618037
30	215 50 6.2	1 36 12.2	2 58.1	2 10 40.9	4 22.3	9.8591013	9.6753174	9.6886034
Apr. 3	222 14 32.8	1 36 1.2	2 46.6	1 52 26.1	4 44.6	9.8594324	9.7016505	9.7144504
7	228 38 16.0	1 35 50.5	2 26.8	1 32 48.8	5 3.3	9.8597620	9.7269997	9.7392967
11	235 1 17.4	1 35 40.2	−1 59.8	+1 12 4.4	−5 18.2	9.8600857	9.7513428	9.7631403
15	241 23 38.9	1 35 30.7	1 26.8	0 50 28.3	5 29.2	9.8603997	9.7746927	9.7860010
19	247 45 23.9	1 35 21.9	0 49.6	0 28 16.6	5 36.0	9.8607001	9.7970701	9.8079028
23	254 6 35.5	1 35 14.1	−0 10.3	+0 5 46.0	5 38.7	9.8609833	9.8185014	9.8288700
27	260 27 17.9	1 35 7.3	+0 29.7	−0 16 47.3	5 37.3	9.8612458	9.8390114	9.8489297
May 1	266 47 35.3	1 35 1.6	+1 8.2	−0 39 6.8	−5 31.8	9.8614842	9.8586289	9.8681147
5	273 7 32.4	1 34 57.1	1 43.3	1 0 56.1	5 22.2	9.8616960	9.8773919	9.8864661
9	279 27 13.8	1 34 53.8	2 13.4	1 21 59.7	5 8.9	9.8618786	9.8953446	9.9040336
13	285 46 44.2	1 34 51.6	2 36.9	1 42 2.5	4 51.9	9.8620296	9.9125381	9.9208635
17	292 6 8.0	1 34 50.5	2 52.8	2 0 50.1	4 31.3	9.8621473	9.9290145	9.9369956
21	298 25 29.8	1 34 50.5	+3 0.2	−2 18 9.1	−4 7.6	9.8622305	9.9448103	9.9524611
25	304 44 53.5	1 34 51.4	2 59.2	2 33 47.0	3 40.9	9.8622780	9.9599511	9.9672834
29	311 4 22.4	1 34 53.3	2 49.2	2 47 32.6	3 11.5	9.8622893	9.9744609	9.9814862
June 2	317 24 0.3	1 34 55.9	2 31.2	2 59 16.0	2 39.8	9.8622643	9.9883628	9.9950942
6	323 43 50.3	1 34 59.2	2 5.6	3 8 48.8	2 6.2	9.8622031	0.0016844	0.0081379
10	330 3 54.6	1 35 3.0	+1 34.0	−3 16 3.8	−1 31.0	9.8621067	0.0144575	0.0206475
14	336 24 15.4	1 35 7.4	0 57.8	3 20 55.5	0 54.7	9.8619760	0.0267115	0.0326520
18	342 44 54.4	1 35 12.1	+0 18.8	3 23 20.1	−0 17.6	9.8618128	0.0384706	0.0441699
22	349 5 53.1	1 35 17.2	−0 21.1	3 23 15.6	+0 19.8	9.8616188	0.0497518	0.0552177
26	355 27 12.9	1 35 22.6	1 0.2	3 20 41.6	0 57.1	9.8613964	0.0605684	0.0658056
30	1 48 54.4	1 35 28.2	−1 36.2	−3 15 39.6	+1 33.8	9.8611482	0.0709312	0.0759462
34	8 10 58.8	1 35 34.0	−2 7.6	−3 8 12.7	+2 9.5	9.8608772	0.0808538	0.0856572

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GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	° ′ ″	′ ″	° ′ ″	′ ″			
July 4	8 10 58.8	1 35 34.0	−2 7.6	−3 8 12.7	+2 9.5	9.8608772	0.0808538	0.0856572
8	14 33 26.5	1 35 39.9	2 32.8	2 58 25.9	2 43.6	9.8605866	0.0903562	0.0949552
12	20 56 18.3	1 35 46.0	2 50.4	2 46 26.0	3 16.0	9.8602801	0.0994560	0.1038610
16	27 19 34.8	1 35 52.3	2 59.7	2 32 21.3	3 46.0	9.8599615	0.1081717	0.1123893
20	33 43 16.6	1 35 58.7	3 0.0	2 16 21.7	4 13.3	9.8596345	0.1165157	0.1205507
24	40 7 24.5	1 36 5.3	−2 51.4	−1 58 38.8	+4 37.6	9.8593033	0.1244955	0.1283507
28	46 31 59.0	1 36 12.1	2 34.2	1 39 25.5	4 58.5	9.8589720	0.1321167	0.1357947
Aug. 1	52 57 1.0	1 36 19.0	2 9.3	1 18 55.6	5 15.7	9.8586449	0.1393857	0.1428911
5	59 22 30.9	1 36 26.0	1 37.9	0 57 24.5	5 29.1	9.8583259	0.1463126	0.1496517
9	65 48 29.4	1 36 33.2	1 1.5	0 35 8.2	5 38.3	9.8580193	0.1529106	0.1560909
13	72 14 56.7	1 36 40.4	−0 22.0	−0 12 23.5	+5 43.3	9.8577288	0.1591938	0.1622209
17	78 41 52.9	1 36 47.6	+0 18.7	+0 10 32.3	5 43.9	9.8574583	0.1651731	0.1680508
21	85 9 17.7	1 36 54.7	0 58.5	0 33 21.9	5 40.1	9.8572113	0.1708548	0.1735849
25	91 37 10.6	1 37 1.6	1 35.4	0 55 47.4	5 31.9	9.8569910	0.1762419	0.1788262
29	98 5 30.5	1 37 8.2	2 7.4	1 17 31.6	5 19.4	9.8568001	0.1813380	0.1837780
Sept. 2	104 34 15.6	1 37 14.2	+2 33.0	+1 38 17.4	+5 2.8	9.8566413	0.1861477	0.1884484
6	111 3 23.8	1 37 19.7	2 50.8	1 57 48.7	4 42.2	9.8565166	0.1906810	0.1928472
10	117 32 52.2	1 37 24.4	2 59.9	2 15 50.1	4 17.9	9.8564277	0.1949485	0.1969862
14	124 2 37.5	1 37 28.1	2 59.7	2 32 7.3	3 50.2	9.8563758	0.1989611	0.2008742
18	130 32 35.4	1 37 30.7	2 50.4	2 46 27.6	3 19.5	9.8563615	0.2027257	0.2045160
22	137 2 41.6	1 37 32.2	+2 32.4	+2 58 39.6	+2 46.1	9.8563848	0.2062455	0.2079142
26	143 32 51.0	1 37 32.3	2 6.5	3 8 33.8	2 10.6	9.8564457	0.2095221	0.2110699
30	150 2 58.4	1 37 31.1	1 34.1	3 16 2.6	1 38.5	9.8565434	0.2125583	0.2139880
Oct. 4	156 32 58.1	1 37 28.5	0 57.0	3 21 0.1	0 55.2	9.8566766	0.2153603	0.2166761
8	163 2 44.6	1 37 24.5	+0 16.9	3 23 23.0	+0 16.2	9.8568433	0.2179367	0.2191436
12	169 32 12.3	1 37 19.1	−0 24.0	+3 23 9.8	−0 22.8	9.8570415	0.2202972	0.2213991
16	176 1 15.7	1 37 12.5	1 3.5	3 20 20.8	1 1.4	9.8572685	0.2224499	0.2234498
20	182 29 50.4	1 37 4.6	1 39.9	3 14 58.7	1 39.2	9.8575214	0.2243988	0.2252973
24	188 57 51.4	1 36 55.7	2 11.1	3 7 8.4	2 15.6	9.8577968	0.2261450	0.2269426
28	195 25 15.3	1 36 46.0	2 35.6	2 56 56.4	2 50.0	9.8580912	0.2276899	0.2283866
Nov. 1	201 51 59.0	1 36 35.7	−2 52.3	+2 44 31.1	−3 22.2	9.8584009	0.2290356	0.2296373
5	208 18 0.3	1 36 24.9	3 0.2	2 30 2.7	3 51.6	9.8587219	0.2301900	0.2306950
9	214 43 18.0	1 36 13.9	2 59.2	2 13 42.6	4 17.9	9.8590502	0.2311567	0.2315739
13	221 7 51.6	1 36 2.9	2 49.2	1 55 43.7	4 40.9	9.8593816	0.2319475	0.2322780
17	227 31 41.7	1 35 52.2	2 30.8	1 36 19.9	5 0.4	9.8597119	0.2325658	0.2328104
21	233 54 49.6	1 35 41.8	−2 5.0	+1 15 46.1	−5 15.9	9.8600371	0.2330124	0.2331711
25	240 17 17.3	1 35 32.2	1 33.0	0 54 17.9	5 27.5	9.8603531	0.2332864	0.2333585
29	246 39 7.8	1 35 23.2	0 56.5	0 32 11.3	5 35.1	9.8606562	0.2333876	0.2333738
Dec. 3	253 0 24.3	1 35 15.2	−0 17.2	+0 9 42.7	5 38.5	9.8609424	0.2333177	0.2332201
7	259 21 11.0	1 35 8.3	+0 22.8	−0 12 51.3	5 37.8	9.8612086	0.2330821	0.2329037
11	265 41 31.9	1 35 2.4	+1 1.7	−0 35 14.2	−5 33.0	9.8614514	0.2326862	0.2324296
15	272 1 31.8	1 34 57.7	1 37.5	0 57 9.9	5 24.2	9.8616678	0.2321340	0.2317996
19	278 21 15.2	1 34 54.2	2 8.5	1 18 22.6	5 11.5	9.8618553	0.2314262	0.2310128
23	284 40 46.7	1 34 51.8	2 33.3	1 38 37.0	4 55.1	9.8620117	0.2305592	0.2300652
27	291 0 10.9	1 34 50.5	2 50.7	1 57 38.8	4 35.2	9.8621353	0.2295300	0.2289531
31	297 19 32.3	1 34 50.3	+2 59.7	−2 15 14.1	−4 12.0	9.8622245	0.2283352	0.2276756
35	303 38 55.0	1 34 51.1	+3 0.0	−2 31 10.6	−3 45.8	9.8622781	0.2269753	

MARS.

GREENWICH MEAN NOON.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 1	216 16 26.6	29 8.00	−22.7	+0 23 57.5	−55.11	0.1984164	0.3397200	0.3369004
5	218 13 19.2	29 18.35	19.2	0 20 15.5	55.84	0.1971322	0.3340362	0.3311273
9	220 10 53.8	29 28.97	15.8	0 16 30.8	56.50	0.1958231	0.3281746	0.3251784
13	222 9 11.4	29 39.87	12.2	0 12 43.5	57.11	0.1944898	0.3221394	0.3190585
17	224 8 13.2	29 51.06	8.6	0 8 53.9	57.66	0.1931336	0.3159364	0.3127731
21	226 8 0.2	30 2.42	− 4.9	+0 5 2.2	−58.16	0.1917558	0.3095691	0.3063243
25	228 8 33.0	30 14.04	− 1.1	+0 1 8.6	58.59	0.1903580	0.3030384	0.2997117
29	230 9 52.9	30 25.94	+ 2.7	−0 2 46.5	58.95	0.1889415	0.2963429	0.2929329
Feb. 2	232 12 0.8	30 38.02	6.5	0 6 43.0	59.26	0.1875079	0.2894809	0.2859878
6	234 14 57.4	30 50.35	10.3	0 10 40.6	59.49	0.1860591	0.2824541	0.2788806
10	236 18 43.9	31 2.89	+14.0	−0 14 38.9	−59.64	0.1845962	0.2752669	0.2716156
14	238 23 20.8	31 15.60	17.8	0 18 37.7	59.72	0.1831212	0.2679268	0.2642010
18	240 28 49.0	31 28.51	21.5	0 22 36.7	59.72	0.1816358	0.2604390	0.2566407
22	242 35 9.2	31 41.54	25.1	0 26 35.5	59.63	0.1801418	0.2528061	0.2489343
26	244 42 21.6	31 54.77	28.6	0 30 33.7	59.45	0.1786411	0.2450260	0.2410804
Mar. 2	246 50 27.5	32 8.16	+31.9	−0 34 31.1	−59.17	0.1771361	0.2370982	0.2330792
6	248 59 27.1	32 21.64	35.0	0 38 27.2	58.80	0.1756287	0.2290236	0.2249326
10	251 9 20.8	32 35.23	37.9	0 42 21.6	58.36	0.1741212	0.2208070	0.2166479
14	253 20 9.0	32 48.89	40.8	0 46 14.1	57.81	0.1726156	0.2124562	0.2082323
18	255 31 52.0	33 2.60	43.4	0 50 4.1	57.14	0.1711141	0.2039772	0.1996912
22	257 44 29.8	33 16.35	+45.8	−0 53 51.2	−56.37	0.1696194	0.1953740	0.1910252
26	259 58 2.8	33 30.14	47.8	0 57 35.1	55.49	0.1681333	0.1866447	0.1822324
30	262 12 30.9	33 43.90	49.5	1 1 15.1	54.50	0.1666589	0.1777880	0.1733109
Apr. 3	264 27 54.0	33 57.64	51.0	1 4 51.1	53.41	0.1651983	0.1688021	0.1642620
7	266 44 11.9	34 11.29	52.3	1 8 22.4	52.18	0.1637544	0.1596917	0.1550915
11	269 1 24.2	34 24.85	+53.2	−1 11 48.5	−50.84	0.1623298	0.1504630	0.1458066
15	271 19 30.6	34 38.34	53.7	1 15 9.1	49.39	0.1609270	0.1411231	0.1364128
19	273 38 30.7	34 51.67	53.9	1 18 23.6	47.81	0.1595486	0.1316754	0.1269110
23	275 58 23.7	35 4.80	53.7	1 21 31.6	46.12	0.1581974	0.1221178	0.1172961
27	278 19 8.9	35 17.75	53.2	1 24 32.6	44.31	0.1568758	0.1124448	0.1075640
May 1	280 40 45.4	35 30.47	+52.3	−1 27 26.1	−42.37	0.1555872	0.1026533	0.0977134
5	283 3 12.3	35 42.89	51.0	1 30 11.6	40.32	0.1543339	0.0927442	0.0877458
9	285 26 28.1	35 54.98	49.4	1 32 48.7	38.17	0.1531185	0.0827201	0.0776675
13	287 50 31.6	36 6.74	47.5	1 35 17.0	35.90	0.1519441	0.0725881	0.0674821
17	290 15 21.5	36 18.15	45.2	1 37 35.9	33.51	0.1508129	0.0623494	0.0571887
21	292 40 56.3	36 29.12	+42.5	−1 39 45.1	−31.02	0.1497279	0.0519999	0.0467801
25	295 7 14.2	36 39.69	39.5	1 41 44.1	28.42	0.1486914	0.0415293	0.0362459
29	297 34 13.2	36 49.75	36.2	1 43 32.5	25.74	0.1477059	0.0309288	0.0255781
June 2	300 1 51.5	36 59.33	32.7	1 45 10.0	22.95	0.1467738	0.0201938	0.0147756
6	302 30 7.1	37 8.36	29.0	1 46 36.1	20.09	0.1458974	0.0093244	0.0038400
10	304 58 57.7	37 16.84	+24.9	−1 47 50.7	−17.15	0.1450790	9.9983226	9.9927725
14	307 28 21.0	37 24.70	20.6	1 48 53.3	14.14	0.1443207	9.9871884	9.9815693
18	309 58 14.5	37 31.92	16.2	1 49 43.8	11.07	0.1436243	9.9759134	9.9702184
22	312 28 35.6	37 38.52	11.7	1 50 21.9	7.95	0.1429919	9.9644830	9.9587044
26	314 59 21.8	37 44.42	7.0	1 50 47.4	4.76	0.1424252	9.9528824	9.9470140
30	317 30 30.1	37 49.66	+ 2.3	−1 51 0.0	− 1.55	0.1419254	9.9410999	9.9351396
July 4	320 1 58.1	37 54.20	− 2.4	−1 50 59.8	+ 1.66	0.1414941	9.9291336	9.9230816

MARS.

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							At Date.	At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 4	320 1 58.1	37 54.20	− 2.4	−1 50 59.8	+ 1.66	0.1414941	9.9291336	9.9230816
8	322 33 42.7	37 57.97	7.1	1 50 46.7	4.90	0.1411323	9.9169834	9.9108401
12	325 5 40.9	38 1.00	11.8	1 50 20.6	8.15	0.1408410	9.9046494	9.8984118
16	327 37 49.7	38 3.29	16.4	1 49 41.5	11.39	0.1406212	9.8921247	9.8857861
20	330 10 6.2	38 4.82	20.9	1 48 49.5	14.61	0.1404734	9.8793948	9.8729486
24	332 42 27.3	38 5.57	−25.2	−1 47 44.6	+17.80	0.1403980	9.8664453	9.8598850
28	335 14 49.8	38 5.52	29.4	1 46 27.1	20.96	0.1403951	9.8532684	9.8465961
Aug. 1	337 47 10.5	38 4.74	33.3	1 44 57.0	24.06	0.1404649	9.8398703	9.8330940
5	340 19 26.7	38 3.19	36.8	1 43 14.6	27.11	0.1406072	9.8262688	9.8193986
9	342 51 35.0	38 0.84	40.1	1 41 20.1	30.07	0.1408214	9.8124851	9.8055314
13	345 23 32.5	37 57.74	−43.2	−1 39 14.0	+32.96	0.1411072	9.7985389	9.7915110
17	347 55 16.0	37 53.90	46.0	1 36 56.4	35.77	0.1414635	9.7844497	9.7773597
21	350 26 42.8	37 49.36	48.2	1 34 27 8	38.50	0.1418895	9.7702460	9.7631146
25	352 57 50.0	37 44.11	50.1	1 31 48.4	41.10	0.1423839	9.7559742	9.7488367
29	355 28 34.8	37 38.17	51.6	1 28 59.0	43.57	0.1429456	9.7417150	9.7346234
Sept. 2	357 58 54.5	37 31.57	−52.9	−1 25 59.8	+45.96	0.1435730	9.7275781	9.7205983
6	0 28 46.5	37 24.31	53.5	1 22 51.3	48.22	0.1442643	9.7137021	9.7069079
10	2 58 8.2	37 16.44	53.9	1 19 34.0	50.35	0.1450177	9.7002380	9.6937131
14	5 26 57.2	37 7.97	53.8	1 16 8.5	52.34	0.1458312	9.6873571	9.6811977
18	7 55 11.2	36 58.95	53.4	1 12 35.3	54.20	0.1467029	9.6752617	9.6695810
22	10 22 48.2	36 49.39	−52.4	−1 8 54.9	+55.94	0.1476306	9.6641895	9.6591238
26	12 49 45.8	36 39.34	51.1	1 5 7.8	57.51	0.1486114	9.6544247	9.6501324
30	15 16 2.3	36 28.82	49.5	1 1 14.8	58.94	0.1496438	9.6462852	9.6429227
Oct. 4	17 41 35.8	36 17.85	47.6	0 57 16.3	60.24	0.1507249	9.6400804	9.6377893
8	20 6 24.6	36 6.49	45.4	0 53 12.9	61.40	0.1518520	9.6360798	9.6349753
12	22 30 27.2	35 54.74	−42.8	−0 49 5.1	+62.41	0.1530225	9.6344944	9.6346549
16	24 53 42.2	35 42.70	39.8	0 44 53.6	63.27	0.1542341	9.6354659	9.6369352
20	27 16 8.4	35 30.36	36.7	0 40 38.9	64.01	0.1554838	9.6390650	9.6418538
24	29 37 44.7	35 17.72	33.4	0 36 21.5	64.61	0.1567691	9.6452915	9.6493645
28	31 58 29.9	35 4.82	29.8	0 32 2.0	65.09	0.1580873	9.6540524	9.6593294
Nov. 1	34 18 23.1	34 51.76	−26.0	−0 27 40.8	+65.42	0.1594356	9.6651622	9.6715155
5	36 37 23.8	34 38.52	22.1	0 23 18.6	65.62	0.1608114	9.6783511	9.6856266
9	38 55 31.2	34 25.12	18.1	0 18 55.8	65.71	0.1622116	9.6933024	9.7013383
13	41 12 44.7	34 11.62	14.0	0 14 32.9	65.69	0.1636338	9.7096962	9.7183391
17	43 29 4.1	33 58.05	9.9	0 10 10.3	65.55	0.1650753	9.7272330	9.7363470
21	45 44 29.0	33 44.40	− 5.6	−0 5 48.5	+65.30	0.1665337	9.7456494	9.7551111
25	47 58 59.2	33 30.70	− 1.4	−0 1 27.9	64.94	0.1680063	9.7647055	9.7744036
29	50 12 34.5	33 17.02	+ 2.8	+0 2 51.0	64.47	0.1694905	9.7841812	9.7940137
Dec. 3	52 25 15.4	33 3.37	6.9	0 7 7.9	63.92	0.1709837	9.8038789	9.8137572
7	54 37 1.5	32 49.74	10.9	0 11 22.4	63.29	0.1724839	9.8236305	9.8334833
11	56 47 53.3	32 36.16	+14.9	+0 15 34.2	+62.56	0.1739883	9.8433023	9.8530781
15	58 57 50.8	32 22.62	18.8	0 19 42.9	61.74	0.1754948	9.8628015	9.8724651
19	61 6 54.4	32 9.21	22.5	0 23 48.1	60.84	0.1770015	9.8820616	9.8915857
23	63 15 4.6	31 55.95	26.1	0 27 49.6	59.91	0.1785059	9.9010313	9.9103924
27	65 22 22.1	31 42.80	29.6	0 31 47.4	58.90	0.1800059	9.9196641	9.9288415
31	67 28 47.2	31 29.81	+32.8	+0 35 40.8	+57.80	0.1814994	9.9379190	9.9468929
35	69 34 20.8	31 16.97	+35.8	+0 39 29.8	+56.65	0.1829848		

JUPITER.

GREENWICH MEAN NOON.

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	° ′ ″	′ ″	″	° ′ ″	″			
Jan. 1	60 18 14.8	5 20.39	−26.6	−0 49 27.0	+5.69	0.7011653	0.6364194	0.6389341
5	60 39 36.1	5 20.25	26.5	0 49 4.2	5.71	0.7012600	0.6415068	0.6441327
9	61 0 56.8	5 20.10	26.4	0 48 41.3	5.74	0.7013553	0.6468066	0.6495231
13	61 22 16.9	5 19.96	26.3	0 48 18.3	5.76	0.7014510	0.6522776	0.6550651
17	61 43 36.5	5 19.82	26.2	0 47 55.2	5.79	0.7015472	0.6578813	0.6607214
21	62 4 55.4	5 19.67	−26.1	−0 47 32.0	+5.81	0.7016439	0.6635817	0.6664581
25	62 26 13.8	5 19.53	26.1	0 47 8.7	5.84	0.7017411	0.6693468	0.6722439
29	62 47 31.7	5 19.38	26.0	0 46 45.3	5.86	0.7018388	0.6751461	0.6780503
Feb. 2	63 8 48.9	5 19.24	25.9	0 46 21.9	5.88	0.7019370	0.6809527	0.6838497
6	63 30 5.6	5 19.10	25.8	0 45 58.3	5.91	0.7020356	0.6867379	0.6896141
10	63 51 21.7	5 18.95	−25.7	−0 45 34.6	+5.93	0.7021348	0.6924754	0.6953186
14	64 12 37.2	5 18.80	25.5	0 45 10.8	5.95	0.7022345	0.6981412	0.7009404
18	64 33 52.1	5 18.65	25.4	0 44 46.9	5.98	0.7023346	0.7037143	0.7064608
22	64 55 6.4	5 18.50	25.3	0 44 23.0	6.00	0.7024352	0.7091781	0.7118644
26	65 16 20.1	5 18.34	25.2	0 43 58.9	6.02	0.7025363	0.7145180	0.7171370
Mar. 2	65 37 33.2	5 18.19	−25.1	−0 43 34.8	+6.04	0.7026378	0.7197197	0.7222645
6	65 58 45.7	5 18.05	24.9	0 43 10.6	6.06	0.7027397	0.7247697	0.7272332
10	66 19 57.6	5 17.90	24.8	0 42 46.3	6.09	0.7028421	0.7296541	0.7320308
14	66 41 8.9	5 17.75	24.7	0 42 21.9	6.11	0.7029450	0.7343625	0.7366477
18	67 2 19.7	5 17.60	24.5	0 41 57.4	6.13	0.7030483	0.7388857	0.7410757
22	67 23 29.8	5 17.45	−24.4	−0 41 32.8	+6.15	0.7031520	0.7432172	0.7453097
26	67 44 39.2	5 17.29	24.2	0 41 8.2	6.17	0.7032562	0.7473524	0.7493448
30	68 5 48.1	5 17.14	24.1	0 40 43.4	6.19	0.7033608	0.7512860	0.7531754
Apr. 3	68 26 56.3	5 16.98	23.9	0 40 18.6	6.21	0.7034658	0.7550123	0.7567959
7	68 48 3.9	5 16.83	23.8	0 39 53.7	6.22	0.7035712	0.7585258	0.7602012
11	69 9 10.9	5 16.67	−23.6	−0 39 28.8	+6.25	0.7036769	0.7618218	0.7633873
15	69 30 17.3	5 16.51	23.4	0 39 3.7	6.27	0.7037831	0.7648975	0.7663524
19	69 51 23.0	5 16.36	23.3	0 38 38.6	6.29	0.7038896	0.7677519	0.7690961
23	70 12 28.2	5 16.20	23.1	0 38 13.4	6.31	0.7039966	0.7703847	0.7716176
27	70 33 32.7	5 16.05	22.9	0 37 48.1	6.33	0.7041039	0.7727946	0.7739156
May 1	70 54 36.6	5 15.89	−22.7	−0 37 22.8	+6.35	0.7042116	0.7749801	0.7759876
5	71 15 39.8	5 15.73	22.5	0 36 57.3	6.37	0.7043195	0.7769381	0.7778312
9	71 36 42.4	5 15.57	22.3	0 36 31.8	6.38	0.7044278	0.7786670	0.7794457
13	71 57 44.3	5 15.41	22.1	0 36 6.3	6.40	0.7045365	0.7801673	0.7808315
17	72 18 45.7	5 15.25	21.9	0 35 40.6	6.42	0.7046455	0.7814389	0.7819898
21	72 39 46.3	5 15.09	−21.8	−0 35 14.9	+6.43	0.7047548	0.7824841	0.7829218
25	73 0 46.4	5 14.93	21.6	0 34 49.2	6.45	0.7048645	0.7833028	0.7836271
29	73 21 45.8	5 14.77	21.4	0 34 23.4	6.46	0.7049745	0.7838946	0.7841051
June 2	73 42 44.5	5 14.61	21.2	0 33 57.5	6.48	0.7050849	0.7842584	0.7843542
6	74 3 42.6	5 14.45	21.0	0 33 31.5	6.50	0.7051956	0.7843929	0.7843746
10	74 24 40.1	5 14.29	−20.8	−0 33 5.5	+6.51	0.7053067	0.7842995	0.7841680
14	74 45 36.9	5 14.12	20.6	0 32 39.4	6.53	0.7054182	0.7839801	0.7837360
18	75 6 33.1	5 13.96	20.3	0 32 13.2	6.54	0.7055299	0.7834360	0.7830803
22	75 27 28.6	5 13.80	20.1	0 31 47.0	6.56	0.7056420	0.7826688	0.7822015
26	75 48 23.5	5 13.63	19.9	0 31 20.8	6.57	0.7057545	0.7816784	0.7810993
30	76 9 17.7	5 13.47	−19.7	−0 30 54.4	+6.58	0.7058672	0.7804641	0.7797728
July 4	76 30 11.2	5 13.31	−19.4	−0 30 28.1	+6.60	0.7059802	0.7790257	0.7782230

JUPITER.

GREENWICH MEAN NOON.

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	° ′ ″	′ ″	″	° ′ ″	″			
July 4	76 30 11.2	5 13.31	−19.4	−0 30 28.1	+6.60	0.7059802	0.7790257	0.7782230
8	76 51 4.1	5 13.14	19.2	0 30 1.7	6.61	0.7060936	0.7773651	0.7764522
12	77 11 56.4	5 12.98	19.0	0 29 35.2	6.62	0.7062073	0.7754847	0.7744633
16	77 32 48.0	5 12.81	18.7	0 29 8.7	6.64	0.7063213	0.7733879	0.7722586
20	77 53 38.9	5 12.65	18.5	0 28 42.1	6.65	0.7064356	0.7710757	0.7698397
24	78 14 29.1	5 12.48	−18.2	−0 28 15.5	+6.66	0.7065502	0.7685505	0.7672079
28	78 35 18.7	5 12.31	18.0	0 27 48.8	6.67	0.7066651	0.7658123	0.7643637
Aug. 1	78 56 7.6	5 12.14	17.7	0 27 22.1	6.68	0.7067803	0.7628628	0.7613098
5	79 16 55.9	5 11.98	17.5	0 26 55.4	6.69	0.7068957	0.7597055	0.7580505
9	79 37 43.5	5 11.81	17.2	0 26 28.6	6.71	0.7070114	0.7563454	0.7545909
13	79 58 30.4	5 11.64	−17.0	−0 26 1.7	+6.72	0.7071274	0.7527877	0.7509364
17	80 19 16.6	5 11.47	16.7	0 25 34.8	6.73	0.7072436	0.7490376	0.7470917
21	80 40 2.2	5 11.31	16.5	0 25 7.9	6.74	0.7073601	0.7450993	0.7430608
25	81 0 47.1	5 11.14	16.2	0 24 40.9	6.75	0.7074769	0.7409772	0.7388491
29	81 21 31.3	5 10.97	16.0	0 24 13.9	6.76	0.7075940	0.7366778	0.7344640
Sept. 2	81 42 14.8	5 10.80	−15.7	−0 23 46.8	+6.77	0.7077114	0.7322091	0.7299144
6	82 2 57.7	5 10.63	15.4	0 23 19.7	6.78	0.7078289	0.7275814	0.7252116
10	82 23 39.9	5 10.46	15.2	0 22 52.6	6.78	0.7079467	0.7228065	0.7203675
14	82 44 21.4	5 10.29	14.9	0 22 25.5	6.79	0.7080647	0.7178962	0.7153938
18	83 5 2.2	5 10.12	14.6	0 21 58.2	6.80	0.7081829	0.7128622	0.7103029
22	83 25 42.3	5 9.95	−14.3	−0 21 31.1	+6.81	0.7083013	0.7077179	0.7051088
26	83 46 21.8	5 9.78	14.1	0 21 3.8	6.82	0.7084200	0.7024781	0.6998280
30	84 7 0.6	5 9.61	13.8	0 20 36.5	6.83	0.7085388	0.6971614	0.6944809
Oct. 4	84 27 38.7	5 9.44	13.5	0 20 9.2	6.83	0.7086579	0.6917898	0.6890910
8	84 48 16.1	5 9.27	13.2	0 19 41.9	6.84	0.7087772	0.6863875	0.6836819
12	85 8 52.9	5 9.10	−12.9	−0 19 14.5	+6.85	0.7088966	0.6809776	0.6782777
16	85 29 29.0	5 8.93	12.6	0 18 47.1	6.85	0.7090161	0.6755857	0.6729045
20	85 50 4.3	5 8.76	12.3	0 18 19.7	6.86	0.7091358	0.6702381	0.6675901
24	86 10 39.0	5 8.59	12.0	0 17 52.2	6.86	0.7092557	0.6649648	0.6623663
28	86 31 13.0	5 8.42	11.7	0 17 24.8	6.87	0.7093758	0.6597993	0.6572682
Nov. 1	86 51 46.4	5 8.24	−11.4	−0 16 57.3	+6.87	0.7094960	0.6547778	0.6523329
5	87 12 19.0	5 8.07	11.1	0 16 29.8	6.88	0.7096164	0.6499380	0.6475978
9	87 32 50.9	5 7.90	10.9	0 16 2.2	6.89	0.7097369	0.6453167	0.6430995
13	87 53 22.2	5 7.73	10.6	0 15 34.7	6.90	0.7098577	0.6409504	0.6388738
17	88 13 52.8	5 7.56	10.3	0 15 7.1	6.90	0.7099786	0.6368747	0.6349575
21	88 34 22.7	5 7.38	−10.0	−0 14 39.5	+6.90	0.7100997	0.6331271	0.6313884
25	88 54 51.8	5 7.21	9.7	0 14 11.9	6.90	0.7102210	0.6297458	0.6282042
29	89 15 20.3	5 7.04	9.4	0 13 44.3	6.91	0.7103424	0.6267676	0.6254404
Dec. 3	89 35 48.1	5 6.86	9.1	0 13 16.6	6.91	0.7104639	0.6242259	0.6231278
7	89 56 15.3	5 6.69	8.7	0 12 49.0	6.91	0.7105855	0.6221487	0.6212916
11	90 16 41.7	5 6.52	− 8.4	−0 12 21.3	+6.92	0.7107073	0.6205584	0.6199516
15	90 37 7.4	5 6.35	8.1	0 11 53.7	6.92	0.7108292	0.6194727	0.6191236
19	90 57 32.4	5 6.17	7.8	0 11 26.0	6.92	0.7109512	0.6189053	0.6188195
23	91 17 56.8	5 6.00	7.5	0 10 58.3	6.92	0.7110733	0.6188665	0.6190472
27	91 38 20.5	5 5.83	7.2	0 10 30.6	6.93	0.7111956	0.6193607	0.6198068
31	91 58 43.4	5 5.65	− 6.9	−0 10 2.9	+6.93	0.7113180	0.6203838	0.6210906
35	92 19 5.7	5 5.48	− 6.6	−0 9 35.2	+6.93	0.7114404		

SATURN.

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Jan. 1	198 34 26.6	1 57.29	+14.1	+2 29 5.7	+0.37	0.9852784	0.9931038	0.9916676
5	198 42 15.7	1 57.26	13.7	2 29 7.1	0.36	0.9853309	0.9902167	0.9887527
9	198 50 4.7	1 57.24	13.2	2 29 8.6	0.34	0.9853835	0.9872773	0.9857921
13	198 57 53.6	1 57.21	12.8	2 29 10.0	0.33	0.9854359	0.9842990	0.9827999
17	199 5 42.4	1 57.18	12.4	2 29 11.3	0.31	0.9854883	0.9812963	0.9797900
21	199 13 31.0	1 57.16	+11.9	+2 29 12.6	+0.30	0.9855407	0.9782828	0.9767763
25	199 21 19.6	1 57.13	11.5	2 29 13.8	0.28	0.9855931	0.9752723	0.9737725
29	199 29 8.0	1 57.10	11.0	2 29 14.9	0.27	0.9856454	0.9722789	0.9707933
Feb. 2	199 36 56.1	1 57.08	10.6	2 29 16.0	0.26	0.9856977	0.9693180	0.9678551
6	199 44 44.7	1 57.05	10.2	2 29 17.1	0.25	0.9857499	0.9664068	0.9649753
10	199 52 32.8	1 57.02	+ 9.7	+2 29 18.1	+0.24	0.9858021	0.9635627	0.9621711
14	200 0 20.8	1 56.99	9.3	2 29 19.1	0.23	0.9858541	0.9608025	0.9594590
18	200 8 8.8	1 56.97	8.8	2 29 20.1	0.22	0.9859062	0.9581425	0.9568551
22	200 15 56.6	1 56.94	8.4	2 29 21.0	0.21	0.9859582	0.9555985	0.9543746
26	200 23 44.3	1 56.91	8.0	2 29 21.9	0.20	0.9860102	0.9531855	0.9520330
Mar. 2	200 31 31.9	1 56.88	+ 7.5	+2 29 22.7	+0.18	0.9860621	0.9509193	0.9498465
6	200 39 19.3	1 56.86	7.1	2 29 23.4	0.17	0.9861139	0.9488164	0.9478309
10	200 47 6.7	1 56.83	6.6	2 29 24.1	0.16	0.9861657	0.9468917	0.9460008
14	200 54 54.0	1 56.80	6.2	2 29 24.8	0.15	0.9862174	0.9451594	0.9443690
18	201 2 41.1	1 56.78	5.8	2 29 25.4	0.14	0.9862691	0.9436307	0.9429460
22	201 10 28.2	1 56.75	+ 5.3	+2 29 26.0	+0.13	0.9863208	0.9423158	0.9417412
26	201 18 15.1	1 56.72	4.9	2 29 26.5	0.12	0.9863724	0.9412233	0.9407630
30	201 26 1.9	1 56.69	4.4	2 29 27.0	0.11	0.9864240	0.9403613	0.9400191
Apr. 3	201 33 48.7	1 56.67	4.0	2 29 27.4	0.09	0.9864755	0.9397369	0.9395156
7	201 41 35.3	1 56.64	3.6	2 29 27.8	0.08	0.9865270	0.9393553	0.9392566
11	201 49 21.8	1 56.61	+ 3.1	+2 29 28.2	+0.07	0.9865785	0.9392192	0.9392427
15	201 57 8.2	1 56.58	2.7	2 29 28.5	0.06	0.9866299	0.9393273	0.9394735
19	202 4 54.4	1 56.56	2.2	2 29 28.7	0.05	0.9866813	0.9396801	0.9399460
23	202 12 40.6	1 56.53	1.8	2 29 28.9	0.04	0.9867326	0.9402710	0.9406547
27	202 20 26.7	1 56.51	1.3	2 29 29.1	0.03	0.9867839	0.9410964	0.9415954
May 1	202 28 12.7	1 56.48	+ 0.9	+2 29 29.2	+0.02	0.9868351	0.9421506	0.9427614
5	202 35 58.5	1 56.45	+ 0.5	2 29 29.3	0.01	0.9868863	0.9434264	0.9441444
9	202 43 44.3	1 56.43	0.0	2 29 29.3	+0.01	0.9869374	0.9449139	0.9457334
13	202 51 29.9	1 56.40	− 0.4	2 29 29.3	−0.01	0.9869884	0.9466012	0.9475157
17	202 59 15.5	1 56.38	0.8	2 29 29.3	0.02	0.9870394	0.9484752	0.9494781
21	203 7 0.9	1 56.35	− 1.3	+2 29 29.2	−0.03	0.9870904	0.9505228	0.9516075
25	203 14 46.3	1 56.32	1.7	2 29 29.0	0.05	0.9871414	0.9527306	0.9538904
29	203 22 31.5	1 56.30	2.2	2 29 28.8	0.06	0.9871923	0.9550851	0.9563131
June 2	203 30 16.6	1 56.27	2.6	2 29 28.6	0.07	0.9872431	0.9575724	0.9588613
6	203 38 1.6	1 56.24	3.0	2 29 28.3	0.08	0.9872939	0.9601774	0.9615186
10	203 45 46.5	1 56.21	− 3.5	+2 29 27.9	−0.09	0.9873446	0.9628830	0.9642687
14	203 53 31.3	1 56.17	3.9	2 29 27.5	0.10	0.9873953	0.9656739	0.9670965
18	204 1 15.9	1 56.15	4.4	2 29 27.1	0.11	0.9874460	0.9685348	0.9699869
22	204 9 0.4	1 56.12	4.8	2 29 26.6	0.13	0.9874966	0.9714512	0.9729260
26	204 16 44.9	1 56.10	5.2	2 29 26.1	0.14	0.9875471	0.9744096	0.9759002
30	204 24 29.2	1 56.08	− 5.7	+2 29 25.5	−0.15	0.9875976	0.9773962	0.9788958
July 4	204 32 13.5	1 56.05	− 6.1	+2 29 24.9	−0.16	0.9876480	0.9803971	0.9818983

SATURN.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	′ ″	″	° ′ ″	″			
July 4	204 32 13.5	1 56.05	− 6.1	+2 29 24.9	−0.16	0.9876480	0.9803971	0.9818983
8	204 39 57.6	1 56.03	6.5	2 29 24.3	0.17	0.9876983	0.9833978	0.9848940
12	204 47 41.7	1 56.00	7.0	2 29 23.6	0.18	0.9877486	0.9863853	0.9878701
16	204 55 25.6	1 55.98	7.4	2 29 22.9	0.19	0.9877988	0.9893471	0.9908150
20	205 3 9.5	1 55.95	7.9	2 29 22.1	0.20	0.9878490	0.9922725	0.9937185
24	205 10 53.3	1 55.93	− 8.3	+2 29 21.2	−0.22	0.9878992	0.9951516	0.9965706
28	205 18 36.9	1 55.90	8.7	2 29 20.3	0.23	0.9879493	0.9979742	0.9993613
Aug. 1	205 26 20.5	1 55.87	9.2	2 29 19.4	0.24	0.9879993	1.0007304	1.0020802
5	205 34 3.9	1 55.84	9.6	2 29 18.4	0.25	0.9880493	1.0034095	1.0047171
9	205 41 47.2	1 55.81	10.1	2 29 17.4	0.26	0.9880992	1.0060022	1.0072638
13	205 49 30.4	1 55.79	−10.5	+2 29 16.4	−0.27	0.9881491	1.0085010	1.0097130
17	205 57 13.5	1 55.76	10.9	2 29 15.3	0.28	0.9881990	1.0108990	1.0120580
21	206 4 56.5	1 55.74	11.4	2 29 14.1	0.29	0.9882488	1.0131895	1.0142927
25	206 12 39.4	1 55.71	11.8	2 29 12.9	0.30	0.9882985	1.0153667	1.0164105
29	206 20 22.2	1 55.69	12.2	2 29 11.7	0.32	0.9883481	1.0174235	1.0184048
Sept. 2	206 28 4.9	1 55.67	−12.7	+2 29 10.4	−0.33	0.9883977	1.0193538	1.0202695
6	206 35 47.5	1 55.64	13.1	2 29 9.1	0.34	0.9884473	1.0211515	1.0219992
10	206 43 30.0	1 55.61	13.5	2 29 7.7	0.35	0.9884968	1.0228122	1.0235900
14	206 51 12.4	1 55.59	14.0	2 29 6.3	0.36	0.9885462	1.0243323	1.0250387
18	206 58 54.7	1 55.56	14.4	2 29 4.8	0.37	0.9885956	1.0257087	1.0263418
22	207 6 36.9	1 55.53	−14.8	+2 29 3.3	−0.38	0.9886450	1.0269377	1.0274958
26	207 14 19.0	1 55.51	15.3	2 29 1.8	0.39	0.9886943	1.0280157	1.0284967
30	207 22 1.0	1 55.48	15.7	2 29 0.2	0.40	0.9887435	1.0289386	1.0293411
Oct. 4	207 29 42.8	1 55.46	16.1	2 28 58.6	0.42	0.9887927	1.0297040	1.0300269
8	207 37 24.6	1 55.43	16.5	2 28 56.9	0.43	0.9888418	1.0303097	1.0305523
12	207 45 6.3	1 55.41	−17.0	+2 28 55.2	−0.44	0.9888909	1.0307547	1.0309168
16	207 52 47.9	1 55.38	17.4	2 28 53.4	0.45	0.9889400	1.0310384	1.0311194
20	208 0 29.4	1 55.36	17.8	2 28 51.5	0.46	0.9889890	1.0311597	1.0311590
24	208 8 10.8	1 55.33	18.3	2 28 49.7	0.47	0.9890379	1.0311172	1.0310342
28	208 15 52.0	1 55.31	18.7	2 28 47.8	0.48	0.9890868	1.0309100	1.0307444
Nov. 1	208 23 33.2	1 55.28	−19.1	+2 28 45.8	−0.49	0.9891356	1.0305375	1.0302894
5	208 31 14.3	1 55.26	19.6	2 28 43.8	0.50	0.9891843	1.0300005	1.0296709
9	208 38 55.2	1 55.23	20.0	2 28 41.8	0.51	0.9892329	1.0293008	1.0288906
13	208 46 36.1	1 55.21	20.4	2 28 39.8	0.52	0.9892815	1.0284405	1.0279506
17	208 54 16.9	1 55.18	20.8	2 28 37.6	0.54	0.9893301	1.0274212	1.0268523
21	209 1 57.5	1 55.16	−21.3	+2 28 35.4	−0.55	0.9893786	1.0262442	1.0255973
25	209 9 38.1	1 55.13	21.7	2 28 33.2	0.56	0.9894271	1.0249119	1.0241881
29	209 17 18.6	1 55.11	22.1	2 28 31.0	0.57	0.9894755	1.0234266	1.0226279
Dec. 3	209 24 59.0	1 55.08	22.5	2 28 28.7	0.58	0.9895238	1.0217927	1.0209217
7	209 32 39.3	1 55.06	22.9	2 28 26.3	0.59	0.9895720	1.0200155	1.0190746
11	209 40 19.4	1 55.03	−23.4	+2 28 23.9	−0.60	0.9896201	1.0180999	1.0170922
15	209 47 59.5	1 55.01	23.8	2 28 21.5	0.61	0.9896682	1.0160520	1.0149799
19	209 55 39.5	1 54.98	24.2	2 28 19.0	0.62	0.9897163	1.0138767	1.0127431
23	210 3 19.4	1 54.96	24.6	2 28 16.5	0.63	0.9897643	1.0115801	1.0103883
27	210 10 59.1	1 54.93	25.1	2 28 13.9	0.65	0.9898123	1.0091690	1.0079231
31	210 18 38.8	1 54.91	−25.5	+2 28 11.3	−0.66	0.9898602	1.0066522	1.0053572
35	210 26 18.4	1 54.88	−25.9	+2 28 8.7	−0.67	0.9899081		

URANUS.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth—	
							At Date.	At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 1	221 48 3.7	44.91	−8.4	+0 24 22.7	−0.51	1.2698348	1.2818085	1.2804797
9	221 54 3.0	44.91	8.4	0 24 18.5	0.52	1.2698630	1.2790944	1.2776589
17	222 0 2.2	44.90	8.4	0 24 14.4	0.52	1.2698912	1.2761801	1.2746640
25	222 6 1.4	44.89	8.3	0 24 10.3	0.52	1.2699195	1.2731175	1.2715470
Feb. 2	222 12 0.5	44.89	8.3	0 24 6.2	0.52	1.2699478	1.2699596	1.2683632
10	222 17 59.6	44.88	−8.3	+0 24 2.0	−0.52	1.2699761	1.2667659	1.2651758
18	222 23 58.6	44.88	8.3	0 23 57.9	0.52	1.2700045	1.2636010	1.2620491
26	222 29 57.6	44.87	8.3	0 23 53.7	0.52	1.2700329	1.2605277	1.2590441
Mar. 6	222 35 56.6	44.87	8.3	0 23 49.6	0.52	1.2700614	1.2576072	1.2562250
14	222 41 55.5	44.86	8.2	0 23 45.5	0.52	1.2700899	1.2549052	1.2536552
22	222 47 54.4	44.86	−8.2	+0 23 41.3	−0.52	1.2701184	1.2524812	1.2513895
30	222 53 53.2	44.85	8.2	0 23 37.1	0.52	1.2701470	1.2503862	1.2494773
Apr. 7	222 59 52.0	44.85	8.2	0 23 33.0	0.52	1.2701756	1.2486684	1.2479644
15	223 5 50.8	44.84	8.2	0 23 28.8	0.52	1.2702043	1.2473691	1.2468852
23	223 11 49.5	44.83	8.2	0 23 24,7	0.52	1.2702330	1.2465150	1.2462608
May 1	223 17 48.1	44.83	−8.1	+0 23 20.5	−0.52	1.2702618	1.2461238	1.2461052
9	223 23 46.7	44.82	8.1	0 23 16.3	0.52	1.2702906	1.2462052	1.2464228
17	223 29 45.3	44.82	8.1	0 23 12.1	0.52	1.2703195	1.2467556	1.2472009
25	223 35 43.8	44.81	8.1	0 23 7.9	0.52	1.2703483	1.2477563	1.2484187
June 2	223 41 42.3	44.81	8.1	0 23 3.8	0.52	1.2703773	1.2491844	1.2500491
10	223 47 40.7	44.80	−8.1	+0 22 59.6	−0.52	1.2704063	1.2510073	1.2520531
18	223 53 39.1	44.80	8.0	0 22 55.4	0.52	1.2704353	1.2531802	1.2543827
26	223 59 37.4	44.79	8.0	0 22 51.2	0.52	1.2704643	1.2556543	1.2569890
July 4	224 5 35.7	44.79	8.0	0 22 47.0	0.53	1.2704934	1.2583798	1.2598192
12	224 11 34.0	44.78	8.0	0 22 42.8	0.53	1.2705225	1.2612994	1.2628133
20	224 17 32.2	44.77	−8.0	+0 22 38.6	−0.53	1.2705517	1.2643534	1.2659132
28	224 23 30.3	44.77	8.0	0 22 34.4	0.53	1.2705809	1.2674861	1.2690646
Aug. 5	224 29 28.5	44.76	7.9	0 22 30.1	0.53	1.2706102	1.2706414	1.2722092
13	224 35 26.6	44.76	7.9	0 22 25.9	0.53	1.2706395	1.2737611	1.2752910
21	224 41 24.6	44.75	7.9	0 22 21.7	0.53	1.2706688	1.2767929	1.2782610
29	224 47 22.6	44.74	−7.9	+0 22 17.5	−0.53	1.2706981	1.2796894	1.2810721
Sept. 6	224 53 20.6	44.74	7.9	0 22 13.3	0.53	1.2707276	1.2824031	1.2836772
14	224 59 18.5	44.73	7.9	0 22 9.0	0.53	1.2707570	1.2848900	1.2860372
22	225 5 16.3	44.73	7.8	0 22 4.8	0.53	1.2707865	1.2871151	1.2881192
30	225 11 14.2	44.72	7.8	0 22 0.6	0.53	1.2708161	1.2890452	1.2898894
Oct. 8	225 17 11.9	44.72	−7.8	+0 21 56.3	−0.53	1.2708456	1.2906486	1.2913203
16	225 23 9.7	44.71	7.8	0 21 52.1	0.53	1.2708752	1.2919023	1.2923928
24	225 29 7.4	44.71	7.8	0 21 47.8	0.53	1.2709048	1.2927896	1.2930904
Nov. 1	225 35 5.0	44.70	7.8	0 21 43.6	0.53	1.2709345	1.2932938	1.2933988
9	225 41 2.6	44.70	7.7	0 21 39.3	0.53	1.2709642	1.2934053	1.2933135
17	225 47 0.2	44.69	−7.7	+0 21 35.1	−0.53	1.2709940	1.2931235	1.2928355
25	225 52 57.7	44.69	7.7	0 21 30.8	0.53	1.2710238	1.2924499	1.2919675
Dec. 3	225 58 55.2	44.68	7.7	0 21 26.5	0.53	1.2710536	1.2913899	1.2907198
11	226 4 52.6	44.68	7.7	0 21 22.3	0.53	1.2710834	1.2899594	1.2891120
19	226 10 50.0	44.67	7.6	0 21 18.0	0.53	1.2711133	1.2881802	1.2871667
27	226 16 47.3	44.66	−7.6	+0 21 13.7	−0.53	1.2711433	1.2860752	1.2849102
35	226 22 44.6	44.66	−7.6	+0 21 9.5	−0.53	1.2711732	1.2836769	

NEPTUNE.

GREENWICH MEAN NOON.

Date.	Heliocentric Longitude, Mean Equinox of Date.	Daily Motion.	Reduction to Orbit.	Heliocentric Latitude.	Daily Motion.	Logarithm of Radius Vector.	Logarithm of Distance from Earth— At Date.	Logarithm of Distance from Earth— At Intermediate Date.
	° ′ ″	″	″	° ′ ″	″			
Jan. 1	72 19 15.1	22.04	−44.5	−1 30 50.8	+0.36	1.4749132	1.4622547	1.4628038
9	72 22 11.4	22.04	44.5	1 30 47.9	0.36	1.4749148	1.4634139	1.4640819
17	72 25 7.7	22.04	44.6	1 30 45.1	0.36	1.4749163	1.4648032	1.4655736
25	72 28 4.1	22.04	44.6	1 30 42.2	0.36	1.4749179	1.4663889	1.4672450
Feb. 2	72 31 0.4	22.04	44.7	1 30 39.3	0.36	1.4749194	1.4681371	1.4690608
10	72 33 56.7	22.04	−44.7	−1 30 36.4	+0.36	1.4749210	1.4700105	1.4709810
18	72 36 53.1	22.04	44.7	1 30 33.5	0.36	1.4749225	1.4719674	1.4729647
26	72 39 49.4	22.04	44.8	1 30 30.6	0.36	1.4749240	1.4739681	1.4749730
Mar. 6	72 42 45.7	22.04	44.8	1 30 27.7	0.36	1.4749256	1.4759744	1.4769672
14	72 45 42.0	22.04	44.8	1 30 24.8	0.36	1.4749271	1.4779471	1.4789094
22	72 48 38.3	22.04	−44.9	−1 30 21.9	+0.36	1.4749286	1.4798499	1.4807641
30	72 51 34.7	22.04	44.9	1 30 19.0	0.36	1.4749301	1.4816488	1.4825007
Apr. 7	72 54 31.0	22.04	44.9	1 30 16.0	0.36	1.4749316	1.4833159	1.4840904
15	72 57 27.3	22.04	45.0	1 30 13.1	0.37	1.4749331	1.4848218	1.4855071
23	73 0 23.6	22.04	45.0	1 30 10.2	0.37	1.4749346	1.4861442	1.4867308
May 1	73 3 20.0	22.04	−45.0	−1 30 7.3	+0.37	1.4749361	1.4872648	1.4877437
9	73 6 16.3	22.04	45.1	1 30 4.3	0.37	1.4749376	1.4881661	1.4885299
17	73 9 12.6	22.04	45.1	1 30 1.4	0.37	1.4749391	1.4888347	1.4890796
25	73 12 8.9	22.04	45.2	1 29 58.5	0.37	1.4749405	1.4892641	1.4893872
June 2	73 15 5.2	22.04	45.2	1 29 55.5	0.37	1.4749420	1.4894488	1.4894480
10	73 18 1.5	22.04	−45.2	−1 29 52.6	+0.37	1.4749435	1.4893856	1.4892616
18	73 20 57.8	22.04	45.3	1 29 49.6	0.37	1.4749449	1.4890771	1.4888327
26	73 23 54.1	22.04	45.3	1 29 46.7	0.37	1.4749464	1.4885292	1.4881672
July 4	73 26 50.4	22.04	45.3	1 29 43.7	0.37	1.4749478	1.4877485	1.4872743
12	73 29 46.8	22.04	45.4	1 29 40.8	0.37	1.4749493	1.4867468	1.4861680
20	73 32 43.1	22.04	−45.4	−1 29 37.8	+0.37	1.4749507	1.4855401	1.4848654
28	73 35 39.4	22.04	45.4	1 29 34.8	0.37	1.4749521	1.4841461	1.4833847
Aug. 5	73 38 35.6	22.04	45.5	1 29 31.9	0.37	1.4749536	1.4825844	1.4817485
13	73 41 31.9	22.04	45.5	1 29 28.9	0.37	1.4749550	1.4808805	1.4799840
21	73 44 28.2	22.04	45.5	1 29 25.9	0.37	1.4749564	1.4790624	1.4781191
29	73 47 24.5	22.04	−45.6	−1 29 22.9	+0.37	1.4749578	1.4771585	1.4761844
Sept. 6	73 50 20.8	22.04	45.6	1 29 19.9	0.37	1.4749592	1.4752015	1.4742145
14	73 53 17.1	22.04	45.6	1 29 17.0	0.37	1.4749606	1.4732277	1.4722455
22	73 56 13.4	22.04	45.7	1 29 14.0	0.37	1.4749620	1.4712726	1.4703132
30	73 59 9.7	22.04	45.7	1 29 11.0	0.37	1.4749634	1.4693726	1.4684558
Oct. 8	74 2 6.0	22.03	−45.7	−1 29 8.0	+0.38	1.4749648	1.4675675	1.4667125
16	74 5 2.2	22.03	45.8	1 29 5.0	0.38	1.4749662	1.4658950	1.4651194
24	74 7 58.5	22.03	45.8	1 29 1.9	0.38	1.4749675	1.4643898	1.4637107
Nov. 1	74 10 54.8	22.03	45.8	1 28 58.9	0.38	1.4749689	1.4630860	1.4625200
9	74 13 51.1	22.03	45.9	1 28 55.9	0.38	1.4749703	1.4620154	1.4615754
17	74 16 47.3	22.03	−45.9	−1 28 52.9	+0.38	1.4749716	1.4612022	1.4608985
25	74 19 43.6	22.03	45.9	1 28 49.9	0.38	1.4749729	1.4606660	1.4605070
Dec. 3	74 22 39.9	22.03	46.0	1 28 46.8	0.38	1.4749743	1.4604223	1.4604128
11	74 25 36.1	22.03	46.0	1 28 43.8	0.38	1.4749756	1.4604778	1.4606175
19	74 28 32.4	22.03	46.0	1 28 40.8	0.38	1.4749770	1.4608307	1.4611169
27	74 31 28.6	22.03	−46.0	−1 28 37.7	+0.38	1.4749783	1.4614740	1.4619008
35	74 34 24.9	22.03	−46.1	−1 28 34.7	+0.38	1.4749796	1.4623946	

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Jan. 1	+0.1897104	+0.1982878	+177	−0.8850771	−0.8834969	−124	−0.3840240	−0.3833387	+373
2	0.2068501	0.2153963	167	0.8818477	0.8801296	123	0.3826238	0.3818787	372
3	0.2239259	0.2324383	157	0.8783428	0.8764873	122	0.3811036	0.3802987	372
4	0.2409327	0.2494085	148	0.8745634	0.8725712	121	0.3794641	0.3785999	371
5	0.2578650	0.2663015	138	0.8705107	0.8683818	120	0.3777061	0.3767826	370
6	+0.2747172	+0.2831114	+129	−0.8661850	−0.8639205	−119	−0.3758295	−0.3748471	+369
7	0.2914835	0.2998326	120	0.8615885	0.8591891	118	0.3738348	0.3727938	368
8	0.3081583	0.3164599	111	0.8567225	0.8541890	118	0.3717236	0.3706243	366
9	0.3247366	0.3329876	102	0.8515888	0.8489222	118	0.3694960	0.3683388	364
10	0.3412124	0.3494103	93	0.8461894	0.8433905	119	0.3671528	0.3659381	362
11	+0.3575807	+0.3657229	+ 84	−0.8405259	−0.8375958	−120	−0.3646949	−0.3634232	+360
12	0.3738363	0.3819203	75	0.8346005	0.8315405	121	0.3621233	0.3607954	357
13	0.3899742	0.3979972	66	0.8284159	0.8252269	122	0.3594394	0.3580553	354
14	0.4059888	0.4139485	58	0.8219738	0.8186570	124	0.3566434	0.3552040	351
15	0.4218757	0.4297696	50	0.8152768	0.8118336	125	0.3537371	0.3522429	348
16	+0.4376298	+0.4454559	+ 42	−0.8083277	−0.8047592	−127	−0.3507214	−0.3491729	+345
17	0.4532472	0.4610033	34	0.8011284	0.7974355	129	0.3475974	0.3459949	342
18	0.4687234	0.4764068	27	0.7936810	0.7898653	131	0.3443657	0.3427101	338
19	0.4840531	0.4916618	19	0.7859886	0.7820514	133	0.3410280	0.3393196	334
20	0.4992325	0.5067645	12	0.7780538	0.7739962	135	0.3375851	0.3358247	330
21	+0.5142575	+0.5217108	+ 5	−0.7698788	−0.7657020	−137	−0.3340384	−0.3322263	+326
22	0.5291238	0.5364960	− 2	0.7614661	0.7571717	140	0.3303885	0.3285254	321
23	0.5438269	0.5511161	9	0.7528187	0.7484071	143	0.3266369	0.3247230	317
24	0.5583629	0.5655667	16	0.7439376	0.7394109	146	0.3227841	0.3208203	312
25	0.5727270	0.5798435	22	0.7348270	0.7301862	149	0.3188318	0.3168186	307
26	+0.5869154	+0.5939421	− 28	−0.7254888	−0.7207352	−153	−0.3147808	−0.3127187	+301
27	0.6009231	0.6078582	34	0.7159258	0.7110610	156	0.3106323	0.3085220	295
28	0.6147466	0.6215875	40	0.7061410	0.7011660	160	0.3063877	0.3042295	289
29	0.6283806	0.6351256	45	0.6961365	0.6910526	164	0.3020475	0.2998421	283
30	0.6418219	0.6484688	50	0.6859151	0.6807246	168	0.2976133	0.2953614	277
31	+0.6550658	+0.6616123	− 55	−0.6754812	−0.6701848	−172	−0.2930865	−0.2907886	+271
Feb. 1	0.6681078	0.6745515	60	0.6648362	0.6594362	176	0.2884681	0.2861252	265
2	0.6809431	0.6872821	64	0.6539849	0.6484828	180	0.2837601	0.2813729	259
3	0.6935681	0.6998005	68	0.6429302	0.6373276	184	0.2789637	0.2765327	252
4	0.7059787	0.7121019	72	0.6316754	0.6259741	188	0.2740802	0.2716063	245
5	+0.7181700	+0.7241827	− 76	−0.6202242	−0.6144264	−192	−0.2691114	−0.2665957	+238
6	0.7301392	0.7360390	79	0.6085811	0.6026888	196	0.2640593	0.2615025	231
7	0.7418816	0.7476668	82	0.5967499	0.5907650	200	0.2589254	0.2563283	224
8	0.7533940	0.7590626	85	0.5847345	0.5786587	204	0.2537114	0.2510749	217
9	0.7646723	0.7702231	88	0.5725384	0.5663741	209	0.2484191	0.2457441	209
10	+0.7757143	+0.7811453	− 90	−0.5601665	−0.5539162	−213	−0.2430503	−0.2403381	+202
11	0.7865159	0.7918256	92	0.5476234	0.5412885	217	0.2376074	0.2348585	194
12	0.7970741	0.8022610	94	0.5349121	0.5284951	221	0.2320916	0.2293071	186
13	0.8073861	0.8124492	96	0.5220379	0.5155408	226	0.2265052	0.2236859	178
14	0.8174498	0.8223878	97	0.5090044	0.5024294	231	0.2208497	0.2179968	170
15	+0.8272626	+0.8320736	− 98	−0.4958163	−0.4891656	−235	−0.2151273	−0.2122415	+162

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Feb. 15	+0.8272626	+0.8320736	−98	−0.4958163	−0.4891656	−235	−0.2151273	−0.2122415	+162
16	0.8368208	0.8415043	99	0.4824777	0.4757532	239	0.2093397	0.2064221	154
17	0.8461235	0.8506780	99	0.4689925	0.4621962	243	0.2034888	0.2005400	145
18	0.8551675	0.8595919	99	0.4553648	0.4484989	247	0.1975761	0.1945973	137
19	0.8639508	0.8682437	99	0.4415990	0.4346657	251	0.1916037	0.1885957	128
20	+0.8724706	+0.8766312	−99	−0.4276994	−0.4207004	−255	−0.1855733	−0.1825368	+119
21	0.8807253	0.8847526	99	0.4136693	0.4066069	258	0.1794864	0.1764224	110
22	0.8887127	0.8926054	99	0.3995136	0.3923897	262	0.1733450	0.1702543	101
23	0.8964304	0.9001874	98	0.3852357	0.3780519	266	0.1671507	0.1640342	92
24	0.9038762	0.9074965	97	0.3708395	0.3635987	270	0.1609051	0.1577637	83
25	+0.9110481	+0.9145305	−95	−0.3563300	−0.3490338	−274	−0.1546102	−0.1514447	+ 74
26	0.9179436	0.9212870	94	0.3417108	0.3343614	278	0.1482676	0.1450791	65
27	0.9245606	0.9277642	92	0.3269863	0.3195859	282	0.1418793	0.1386689	56
28	0.9308974	0.9339596	90	0.3121609	0.3047122	286	0.1354471	0.1322153	47
Mar. 1	0.9369509	0.9398711	87	0.2972400	0.2897445	289	0.1289733	0.1257211	37
2	+0.9427200	+0.9454974	−84	−0.2822266	−0.2746872	−293	−0.1224592	−0.1191879	+ 28
3	0.9482029	0.9508363	81	0.2671266	0.2595452	296	0.1159073	0.1126177	18
4	0.9533973	0.9558858	78	0.2519439	0.2443235	299	0.1093194	0.1060128	+ 9
5	0.9583016	0.9606445	75	0.2366843	0.2290269	302	0.1026980	0.0993752	− 1
6	0.9629144	0.9651113	72	0.2213519	0.2136599	305	0.0960448	0.0927071	10
7	+0.9672348	+0.9692846	−68	−0.2059517	−0.1982283	−308	−0.0893623	−0.0860109	− 20
8	0.9712607	0.9731631	64	0.1904899	0.1827366	311	0.0826529	0.0792885	30
9	0.9749916	0.9767463	60	0.1749697	0.1671903	314	0.0759182	0.0725424	40
10	0.9784269	0.9800334	56	0.1593984	0.1515943	317	0.0691612	0.0657748	49
11	0.9815657	0.9830237	51	0.1437790	0.1359532	320	0.0623835	0.0589876	59
12	+0.9844073	+0.9857166	−46	−0.1281174	−0.1202725	−323	−0.0555874	−0.0521834	− 69
13	0.9869516	0.9881123	41	0.1124188	0.1045567	325	0.0487756	0.0453642	79
14	0.9891986	0.9902106	36	0.0966870	0.0888108	328	0.0419495	0.0385320	88
15	0.9911482	0.9920115	30	0.0809283	0.0730399	330	0.0351118	0.0316890	98
16	0.9928005	0.9935152	25	0.0651463	0.0572483	332	0.0282641	0.0248373	108
17	+0.9941555	+0.9947214	−19	−0.0493463	−0.0414409	−334	−0.0214088	−0.0179788	−118
18	0.9952130	0.9956304	13	0.0335326	0.0256220	336	0.0145476	0.0111155	127
19	0.9959735	0.9962123	7	0.0177097	−0.0097964	338	0.0076827	−0.0042496	137
20	0.9964370	0.9965575	− 1	−0.0018824	+0.0060318	340	−0.0008159	+0.0026176	146
21	0.9966040	0.9965765	+ 6	+0.0139455	0.0218578	341	+0.0060509	0.0094836	156
22	+0.9964750	+0.9962096	+12	+0.0297684	+0.0376771	−343	+0.0129157	+0.0163469	−166
23	0.9960502	0.9957270	19	0.0455831	0.0534859	344	0.0197769	0.0232055	176
24	0.9953295	0.9948588	26	0.0613849	0.0692795	346	0.0266325	0.0300576	186
25	0.9943141	0.9936954	33	0.0771692	0.0850535	347	0.0334806	0.0369013	195
26	0.9930030	0.9922369	40	0.0929318	0.1008033	348	0.0403193	0.0437344	204
27	+0.9913973	+0.9904841	+48	+0.1086676	+0.1165245	−349	+0.0471465	+0.0505554	−213
28	0.9894974	0.9884372	56	0.1243732	0.1322128	350	0.0539608	0.0573623	222
29	0.9873036	0.9860965	64	0.1400427	0.1478623	350	0.0607596	0.0641525	231
30	0.9848161	0.9834626	72	0.1556713	0.1634696	351	0.0675408	0.0709245	240
31	0.9820361	0.9805367	80	0.1712562	0.1790301	352	0.0743032	0.0776765	249
32	+0.9789644	+0.9773194	+88	+0.1867911	+0.1945388	−353	+0.0810441	+0.0844059	−258

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Apr. 1	+0.9789644	+0.9773194	+ 88	+0.1867911	+0.1945388	−353	+0.0810441	+0.0844059	−258
2	0.9756018	0.9738116	97	0.2022721	0.2099899	353	0.0877616	0.0911108	266
3	0.9719489	0.9700140	106	0.2176932	0.2253800	354	0.0944533	0.0977889	275
4	0.9680070	0.9659282	115	0.2330504	0.2407035	354	0.1011173	0.1044383	283
5	0.9637778	0.9615561	124	0.2483389	0.2559560	354	0.1077516	0.1110569	292
6	+0.9592630	+0.9568986	+133	+0.2635541	+0.2711321	−354	+0.1143538	+0.1176422	−300
7	0.9544633	0.9519575	142	0.2786899	0.2862274	354	0.1209219	0.1241926	309
8	0.9493815	0.9467356	152	0.2937436	0.3012379	354	0.1274541	0.1307060	317
9	0.9440200	0.9412346	162	0.3087097	0.3161585	354	0.1339482	0.1371903	325
10	0.9383798	0.9354560	172	0.3235836	0.3309845	354	0.1404021	0.1436134	333
11	+0.9324634	+0.9294025	+182	+0.3383608	+0.3457122	−354	+0.1468139	+0.1500037	−341
12	0.9262736	0.9230771	192	0.3530379	0.3603370	353	0.1531822	0.1563491	348
13	0.9198132	0.9164818	202	0.3676093	0.3748547	353	0.1595043	0.1626479	356
14	0.9130835	0.9096190	213	0.3820723	0.3892614	352	0.1657795	0.1688986	363
15	0.9060883	0.9024914	223	0.3964217	0.4035531	351	0.1720051	0.1750990	371
16	+0.8988288	+0.8951010	+234	+0.4106549	+0.4177266	−350	+0.1781800	+0.1812481	−378
17	0.8913082	0.8874507	245	0.4247678	0.4317778	349	0.1843029	0.1873441	385
18	0.8835288	0.8795426	256	0.4387563	0.4457030	347	0.1903716	0.1933852	392
19	0.8754928	0.8713799	267	0.4526170	0.4594983	346	0.1963848	0.1993702	398
20	0.8672040	0.8629652	279	0.4663463	0.4731604	344	0.2023412	0.2052974	404
21	+0.8586635	+0.8542997	+290	+0.4799403	+0.4866855	−342	+0.2082388	+0.2111651	−410
22	0.8498739	0.8453866	302	0.4933955	0.5000700	340	0.2140762	0.2169720	416
23	0.8408381	0.8362287	314	0.5067086	0.5133107	338	0.2198522	0.2227166	422
24	0.8315587	0.8268284	326	0.5198759	0.5264039	335	0.2255651	0.2283974	428
25	0.8220381	0.8171882	338	0.5328941	0.5393456	333	0.2312133	0.2340125	434
26	+0.8122789	+0.8073103	+350	+0.5457582	+0.5521318	−330	+0.2367949	+0.2395605	−439
27	0.8022830	0.7971974	362	0.5584658	0.5647597	327	0.2423088	0.2450398	444
28	0.7920540	0.7868531	375	0.5710130	0.5772251	324	0.2477532	0.2504487	449
29	0.7815950	0.7762799	387	0.5833957	0.5895243	321	0.2531263	0.2557857	454
30	0.7709082	0.7654803	400	0.5956105	0.6016537	318	0.2584268	0.2610492	458
May 1	+0.7599968	+0.7544582	+413	+0.6076534	+0.6136092	−315	+0.2636527	+0.2662372	−463
2	0.7488647	0.7432167	426	0.6195207	0.6253874	311	0.2688024	0.2713482	467
3	0.7375147	0.7317590	439	0.6312088	0.6369847	307	0.2738744	0.2763809	472
4	0.7259502	0.7200890	452	0.6427144	0.6483974	303	0.2788673	0.2813333	476
5	0.7141757	0.7082104	465	0.6540334	0.6596224	299	0.2837789	0.2862041	480
6	+0.7021937	+0.6961264	+478	+0.6651638	+0.6706568	−295	+0.2886087	+0.2909922	−483
7	0.6900089	0.6838418	491	0.6761013	0.6814970	291	0.2933545	0.2956957	486
8	0.6776255	0.6713603	505	0.6868434	0.6921398	287	0.2980155	0.3003136	489
9	0.6650469	0.6586859	518	0.6973861	0.7025821	282	0.3025899	0.3048442	492
10	0.6522779	0.6458236	532	0.7077273	0.7128213	277	0.3070766	0.3092867	494
11	+0.6393231	+0.6327767	+546	+0.7178639	+0.7228548	−271	+0.3114744	+0.3136396	−497
12	0.6261851	0.6195488	560	0.7277936	0.7326802	265	0.3157822	0.3179022	499
13	0.6128686	0.6061451	573	0.7375141	0.7422951	259	0.3199993	0.3220733	501
14	0.5993787	0.5925695	587	0.7470228	0.7516968	253	0.3241242	0.3261519	502
15	0.5857183	0.5788257	601	0.7563169	0.7608829	247	0.3281562	0.3301369	504
16	+0.5718922	+0.5649181	+615	+0.7653945	+0.7698516	−241	+0.3320940	+0.3340275	−505

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
May 16	+0.5718922	+0.5649181	+615	+0.7653945	+0.7698516	−241	+0.3320940	+0.3340275	−505
17	0.5579040	0.5508504	629	0.7742539	0.7786012	235	0.3359372	0.3378231	506
18	0.5437578	0.5366268	643	0.7828931	0.7871291	228	0.3396849	0.3415226	507
19	0.5294578	0.5222514	657	0.7913092	0.7954331	221	0.3433360	0.3451251	508
20	0.5150079	0.5077278	671	0.7995007	0.8035117	213	0.3468896	0.3486297	508
21	+0.5004114	+0.4930592	+685	+0.8074657	+0.8113625	−205	+0.3503452	+0.3520359	−507
22	0.4856719	0.4782504	700	0.8152017	0.8189831	197	0.3537014	0.3553421	507
23	0.4707949	0.4633055	714	0.8227066	0.8263721	189	0.3569576	0.3585483	507
24	0.4557829	0.4482279	728	0.8299791	0.8335274	180	0.3601134	0.3616530	507
25	0.4406407	0.4330218	742	0.8370167	0.8404467	171	0.3631670	0.3646555	506
26	+0.4253718	+0.4176912	+756	+0.8438172	+0.8471277	−161	+0.3661181	+0.3675547	−505
27	0.4099807	0.4022408	770	0.8503782	0.8535685	151	0.3689653	0.3703499	504
28	0.3944719	0.3866746	784	0.8566982	0.8597672	141	0.3717082	0.3730401	502
29	0.3788494	0.3709967	798	0.8627751	0.8657219	131	0.3743456	0.3756245	500
30	0.3631172	0.3552116	812	0.8686071	0.8714303	121	0.3768766	0.3781019	498
31	+0.3472806	+0.3393249	+826	+0.8741915	+0.8768906	−111	+0.3793002	+0.3804716	−496
June 1	0.3313449	0.3233409	839	0.8795273	0.8821015	101	0.3816160	0.3827331	494
2	0.3153136	0.3072637	853	0.8846129	0.8870615	90	0.3838229	0.3848855	491
3	0.2991918	0.2910986	866	0.8894469	0.8917689	79	0.3859206	0.3869281	488
4	0.2829847	0.2748509	880	0.8940273	0.8962211	68	0.3879080	0.3888604	485
5	+0.2666977	+0.2585255	+893	+0.8983530	+0.9004198	− 56	+0.3897850	+0.3906817	−482
6	0.2503350	0.2421268	906	0.9024226	0.9043614	44	0.3915506	0.3923917	479
7	0.2339018	0.2256608	919	0.9062361	0.9080464	32	0.3932049	0.3939902	475
8	0.2174040	0.2091318	932	0.9097921	0.9114731	19	0.3947474	0.3954765	471
9	0.2008451	0.1925448	944	0.9130895	0.9146411	− 6	0.3961776	0.3968506	467
10	+0.1842313	+0.1759050	+956	+0.9161280	+0.9175502	+ 7	+0.3974953	+0.3981120	−463
11	0.1675666	0.1592168	968	0.9189076	0.9202000	21	0.3987007	0.3992610	458
12	0.1508562	0.1424855	980	0.9214274	0.9225898	35	0.3997931	0.4002971	453
13	0.1341051	0.1257157	992	0.9236871	0.9247193	50	0.4007728	0.4012204	448
14	0.1173178	0.1089118	1004	0.9256864	0.9265884	64	0.4016398	0.4020309	442
15	+0.1004983	+0.0920779	+1015	+0.9274254	+0.9281972	+ 79	+0.4023937	+0.4027283	−436
16	0.0836513	0.0752190	1026	0.9289039	0.9295453	94	0.4030347	0.4033128	430
17	0.0667817	0.0583399	1037	0.9301214	0.9306323	109	0.4035625	0.4037840	424
18	0.0498939	0.0414440	1048	0.9310779	0.9314582	124	0.4039773	0.4041423	418
19	0.0329912	0.0245362	1058	0.9317732	0.9320228	140	0.4042790	0.4043875	411
20	+0.0160796	+0.0076218	+1068	+0.9322071	+0.9323260	+156	+0.4044676	+0.4045193	−405
21	−0.0008367	−0.0092956	1078	0.9323796	0.9323677	173	0.4045426	0.4045377	398
22	0.0177542	0.0262119	1088	0.9322904	0.9321477	190	0.4045044	0.4044428	391
23	0.0346681	0.0431224	1097	0.9319396	0.9316661	207	0.4043529	0.4042346	383
24	0.0515740	0.0600220	1106	0.9313271	0.9309225	224	0.4040878	0.4039125	375
25	−0.0684660	−0.0769058	+1114	+0.9304523	+0.9299165	+242	+0.4037088	+0.4034767	−367
26	0.0853407	0.0937700	1122	0.9293152	0.9286483	260	0.4032163	0.4029273	360
27	0.1021931	0.1106092	1130	0.9279160	0.9271183	278	0.4026099	0.4022641	352
28	0.1190177	0.1274187	1138	0.9262551	0.9253265	296	0.4018900	0.4014874	344
29	0.1358107	0.1441933	1145	0.9243324	0.9232729	314	0.4010563	0.4005968	336
30	−0.1525659	−0.1609280	+1152	+0.9221480	+0.9209580	+332	+0.4001090	+0.3995929	−327

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
July 1	–0.1692790	–0.1776183	+1158	+0.9197028	+0.9183825	+ 351	+0.3990484	+0.3984756	–318
2	0.1859451	0.1942582	1164	0.9169972	0.9155470	370	0.3978746	0.3972454	309
3	0.2025576	0.2108432	1169	0.9140320	0.9124522	389	0.3965881	0.3959025	299
4	0.2191138	0.2273686	1174	0.9108078	0.9090991	408	0.3951889	0.3944474	290
5	0.2356071	0.2438287	1179	0.9073259	0.9054886	428	0.3936779	0.3928805	280
6	–0.2520328	–0.2602190	+1183	+0.9035872	+0.9016223	+ 447	+0.3920554	+0.3912025	–271
7	0.2683865	0.2765347	1187	0.8995938	0.8975016	467	0.3903219	0.3894139	261
8	0.2846631	0.2927711	1191	0.8953462	0.8931276	487	0.3884785	0.3875156	250
9	0.3008580	0.3089232	1194	0.8908464	0.8885024	507	0.3865254	0.3855080	239
10	0.3169663	0.3249868	1196	0.8860958	0.8836268	527	0.3844635	0.3833921	228
11	–0.3329840	–0.3409574	+1198	+0.8810958	+0.8785030	+ 548	+0.3822936	+0.3811684	–217
12	0.3489065	0.3568307	1200	0.8758486	0.8731326	568	0.3800161	0.3788375	206
13	0.3647295	0.3726020	1201	0.8703553	0.8675170	588	0.3776324	0.3764007	195
14	0.3804482	0.3882680	1201	0.8646178	0.8616581	608	0.3751427	0.3738585	184
15	0.3960603	0.4038243	1200	0.8586381	0.8555579	628	0.3725481	0.3712115	173
16	–0.4115597	–0.4192661	+1199	+0.8524178	+0.8492181	+ 649	+0.3698491	+0.3684609	–162
17	0.4269432	0.4345906	1198	0.8459589	0.8426402	670	0.3670469	0.3656072	150
18	0.4422076	0.4497934	1197	0.8392625	0.8358261	691	0.3641418	0.3626510	138
19	0.4573477	0.4648700	1195	0.8323310	0.8287773	712	0.3611348	0.3595933	126
20	0.4723598	0.4798167	1193	0.8251654	0.8214956	733	0.3580265	0.3564345	114
21	–0.4872401	–0.4946294	+1190	+0.8177680	+0.8139825	+ 753	+0.3548174	+0.3531753	–102
22	0.5019844	0.5093042	1186	0.8101397	0.8062399	774	0.3515084	0.3498168	90
23	0.5165885	0.5238365	1182	0.8022833	0.7982700	794	0.3481005	0.3463596	78
24	0.5310480	0.5382226	1177	0.7942002	0.7900741	815	0.3445941	0.3428043	66
25	0.5453596	0.5524583	1172	0.7858920	0.7816545	836	0.3409901	0.3391518	53
26	–0.5595181	–0.5665386	+1166	+0.7773613	+0.7730126	+ 857	+0.3372893	+0.3354027	– 40
27	0.5735193	0.5804599	1160	0.7686091	0.7641514	877	0.3334923	0.3315583	27
28	0.5873597	0.5942177	1153	0.7596394	0.7550732	898	0.3296009	0.3276198	14
29	0.6010338	0.6078078	1146	0.7504532	0.7457798	918	0.3256153	0.3235876	– 1
30	0.6145389	0.6212262	1138	0.7410531	0.7362733	939	0.3215368	0.3194628	+ 12
31	–0.6278693	–0.6344677	+1129	+0.7314410	+0.7265570	+ 959	+0.3173660	+0.3152468	+ 25
Aug. 1	0.6410209	0.6475285	1120	0.7216214	0.7166341	979	0.3131051	0.3109410	38
2	0.6539900	0.6604048	1111	0.7115957	0.7065070	999	0.3087547	0.3065466	51
3	0.6667725	0.6730926	1101	0.7013680	0.6961790	1019	0.3043167	0.3020649	64
4	0.6793647	0.6855884	1090	0.6909404	0.6856531	1038	0.2997916	0.2974971	78
5	–0.6917630	–0.6978879	+1079	+0.6803168	+0.6749324	+1057	+0.2951815	+0.2928450	+ 91
6	0.7039629	0.7099877	1067	0.6695001	0.6640203	1076	0.2904877	0.2881097	105
7	0.7159618	0.7218845	1055	0.6584934	0.6529201	1095	0.2857114	0.2832929	119
8	0.7277555	0.7335744	1042	0.6473006	0.6416351	1114	0.2808544	0.2783959	133
9	0.7393410	0.7450548	1029	0.6359243	0.6301688	1133	0.2759178	0.2734204	146
10	–0.7507155	–0.7563226	+1015	+0.6243689	+0.6185248	+1151	+0.2709038	+0.2683680	+160
11	0.7618758	0.7673749	1001	0.6126370	0.6067057	1170	0.2658134	0.2632399	173
12	0.7728193	0.7782086	986	0.6007317	0.5947156	1188	0.2606478	0.2580375	187
13	0.7835424	0.7888206	971	0.5886576	0.5825576	1206	0.2554091	0.2527625	200
14	0.7940427	0.7992086	955	0.5764165	0.5702350	1223	0.2500981	0.2474162	214
15	–0.8043178	–0.8093698	+ 939	+0.5640131	+0.5577511	+1240	+0.2447168	+0.2420001	+227

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Aug. 16	−0.8143644	−0.8193012	+922	+0.5514493	+0.5451086	+1257	+0.2392662	+0.2365152	+241
17	0.8241798	0.8290000	905	0.5387291	0.5323114	1274	0.2337477	0.2309635	255
18	0.8337615	0.8384641	888	0.5258558	0.5193627	1291	0.2281629	0.2253461	269
19	0.8431071	0.8476899	870	0.5128328	0.5062660	1307	0.2225131	0.2196642	283
20	0.8522124	0.8566746	851	0.4996629	0.4930244	1323	0.2167996	0.2139195	297
21	−0.8610760	−0.8654162	+832	+0.4863504	+0.4796409	+1338	+0.2110241	+0.2081133	+311
22	0.8696948	0.8739112	812	0.4728969	0.4661192	1353	0.2051874	0.2022469	324
23	0.8780651	0.8821568	792	0.4593079	0.4524629	1367	0.1992918	0.1963220	338
24	0.8861855	0.8901505	771	0.4455852	0.4386755	1381	0.1933380	0.1903400	351
25	0.8940518	0.8978892	750	0.4317340	0.4247611	1395	0.1873283	0.1843030	365
26	−0.9016621	−0.9053701	+728	+0.4177574	+0.4107236	+1408	+0.1812642	+0.1782122	+378
27	0.9090130	0.9125904	706	0.4036599	0.3965666	1421	0.1751472	0.1720694	391
28	0.9161021	0.9195479	684	0.3894445	0.3822943	1434	0.1689789	0.1658763	404
29	0.9229274	0.9262399	661	0.3751164	0.3679111	1447	0.1627618	0.1596352	417
30	0.9294855	0.9326641	638	0.3606791	0.3534209	1459	0.1564970	0.1533475	430
31	−0.9357753	−0.9388186	+615	+0.3461371	+0.3388284	+1471	+0.1501868	+0.1470152	+443
Sept. 1	0.9417937	0.9447005	591	0.3314951	0.3241377	1482	0.1438330	0.1406404	455
2	0.9475387	0.9503081	567	0.3167570	0.3093537	1493	0.1374377	0.1342251	468
3	0.9530085	0.9556399	542	0.3019282	0.2944810	1503	0.1310029	0.1277713	481
4	0.9582020	0.9606945	517	0.2870126	0.2795234	1513	0.1245305	0.1212807	494
5	−0.9631173	−0.9654700	+492	+0.2720143	+0.2644863	+1522	+0.1180223	+0.1147558	+506
6	0.9677527	0.9699652	466	0.2569395	0.2493741	1531	0.1114811	0.1081984	519
7	0.9721073	0.9741789	440	0.2417908	0.2341902	1540	0.1049080	0.1016101	531
8	0.9761798	0.9781100	414	0.2265731	0.2189402	1548	0.0983051	0.0949933	543
9	0.9799693	0.9817576	387	0.2112918	0.2036282	1556	0.0916748	0.0883498	555
10	−0.9834748	−0.9851209	+360	+0.1959502	+0.1882584	+1563	+0.0850185	+0.0816812	+567
11	0.9866957	0.9881990	333	0.1805533	0.1728352	1569	0.0783382	0.0749896	579
12	0.9896307	0.9909908	306	0.1651048	0.1573629	1575	0.0716358	0.0682769	591
13	0.9922791	0.9934958	278	0.1496097	0.1418456	1581	0.0649132	0.0615447	602
14	0.9946405	0.9957130	250	0.1340714	0.1262878	1587	0.0581719	0.0547950	613
15	−0.9967134	−0.9976415	+222	+0.1184950	+0.1106933	+1592	+0.0514142	+0.0480294	+624
16	0.9984973	0.9992807	193	0.1028834	0.0950662	1597	0.0446412	0.0412497	635
17	0.9999916	1.0006299	164	0.0872419	0.0794111	1601	0.0378551	0.0344577	646
18	1.0011956	1.0016885	135	0.0715743	0.0637322	1604	0.0310576	0.0276552	657
19	1.0021085	1.0024556	106	0.0558851	0.0480334	1607	0.0242507	0.0208441	667
20	−1.0027295	−1.0029302	+ 77	+0.0401779	+0.0323194	+1610	+0.0174358	+0.0140262	+678
21	1.0030577	1.0031118	47	0.0244582	0.0165948	1612	0.0106154	0.0072035	688
22	1.0030924	1.0029995	+ 17	+0.0087298	+0.0008638	1614	+0.0037910	+0.0003779	698
23	1.0028330	1.0025928	− 13	−0.0070027	−0.0148691	1615	−0.0030354	−0.0064486	707
24	1.0022788	1.0018910	43	0.0227348	0.0305992	1616	0.0098616	0.0132742	717
25	−1.0014295	−1.0008942	− 74	−0.0384616	−0.0463213	+1616	−0.0166858	−0.0200963	+726
26	1.0002850	0.9996018	105	0.0541778	0.0620306	1615	0.0235055	0.0269131	735
27	0.9988448	0.9980139	136	0.0698791	0.0777226	1614	0.0303188	0.0337224	744
28	0.9971091	0.9961305	167	0.0855604	0.0933919	1613	0.0371235	0.0405219	753
29	0.9950780	0.9939518	198	0.1012165	0.1090336	1611	0.0439173	0.0473094	761
30	−0.9927518	−0.9914782	−229	−0.1168428	−0.1246436	+1609	−0.0506980	−0.0540830	+769

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Oct. 1	−0.9901311	−0.9887104	− 260	−0.1324349	−0.1402157	+1607	−0.0574639	−0.0608402	+777
2	0.9872163	0.9856490	291	0.1479859	0.1557454	1604	0.0642119	0.0675789	785
3	0.9840086	0.9822952	323	0.1634931	0.1712281	1601	0.0709408	0.0742971	792
4	0.9805089	0.9786499	354	0.1789501	0.1866584	1597	0.0776477	0.0809924	799
5	0.9767182	0.9747140	386	0.1943527	0.2020325	1592	0.0843309	0.0876631	806
6	−0.9726375	−0.9704889	− 418	−0.2096969	−0.2173450	+1587	−0.0909886	−0.0943070	+812
7	0.9682684	0.9659762	450	0.2249767	0.2325916	1581	0.0976181	0.1009220	818
8	0.9636124	0.9611772	482	0.2401890	0.2477681	1575	0.1042182	0.1075065	824
9	0.9586707	0.9560933	514	0.2553284	0.2628695	1568	0.1107865	0.1140583	830
10	0.9534451	0.9507262	546	0.2703908	0.2778920	1561	0.1173215	0.1205758	836
11	−0.9479369	−0.9450773	− 578	−0.2853723	−0.2928311	+1554	−0.1238211	−0.1270571	+841
12	0.9421477	0.9391482	610	0.3002680	0.3076827	1546	0.1302835	0.1335003	846
13	0.9360791	0.9329405	642	0.3150744	0.3224422	1537	0.1367071	0.1399036	851
14	0.9297327	0.9264559	674	0.3297860	0.3371058	1528	0.1430897	0.1462654	855
15	0.9231102	0.9196959	706	0.3444006	0.3516694	1519	0.1494302	0.1525838	859
16	−0.9162132	−0.9126622	− 738	−0.3589121	−0.3661285	+1509	−0.1557261	−0.1588571	+863
17	0.9090431	0.9053561	770	0.3733179	0.3804797	1499	0.1619763	0.1650836	866
18	0.9016015	0.8977795	802	0.3876133	0.3947180	1488	0.1681787	0.1712612	869
19	0.8938902	0.8899339	834	0.4017934	0.4088392	1477	0.1743311	0.1773681	871
20	0.8859108	0.8818209	866	0.4158547	0.4228395	1465	0.1804322	0.1834630	874
21	−0.8776646	−0.8734425	− 898	−0.4297928	−0.4367139	+1452	−0.1864800	−0.1894832	+876
22	0.8691546	0.8648010	930	0.4436024	0.4504579	1439	0.1924722	0.1954469	878
23	0.8603820	0.8558979	961	0.4572799	0.4640677	1426	0.1984071	0.2013526	880
24	0.8513490	0.8467359	993	0.4708208	0.4775385	1412	0.2042830	0.2071981	882
25	0.8420586	0.8373172	1025	0.4842205	0.4908663	1398	0.2100976	0.2129815	883
26	−0.8325123	−0.8276443	−1057	−0.4974751	−0.5040461	+1384	−0.2158492	−0.2187006	+884
27	0.8227134	0.8177199	1088	0.5105789	0.5170733	1369	0.2215355	0.2243537	884
28	0.8126643	0.8075469	1120	0.5235287	0.5299444	1353	0.2271548	0.2299388	884
29	0.8023681	0.7971282	1151	0.5363199	0.5426543	1337	0.2327054	0.2354541	884
30	0.7918278	0.7864674	1182	0.5489473	0.5551987	1321	0.2381847	0.2408972	883
31	−0.7810473	−0.7755677	−1213	−0.5614078	−0.5675741	+1304	−0.2435914	−0.2462669	+882
Nov. 1	0.7700291	0.7644322	1244	0.5736970	0.5797760	1287	0.2489235	0.2515611	881
2	0.7587772	0.7530645	1275	0.5858107	0.5918007	1269	0.2541796	0.2567785	879
3	0.7472948	0.7414686	1306	0.5977454	0.6036443	1251	0.2593576	0.2619169	877
4	0.7355863	0.7296484	1336	0.6094971	0.6153033	1233	0.2644561	0.2669752	875
5	−0.7236552	−0.7176072	−1366	−0.6210624	−0.6267741	+1214	−0.2694738	−0.2719517	+873
6	0.7115049	0.7053485	1396	0.6324379	0.6380533	1194	0.2744088	0.2768450	870
7	0.6991387	0.6928763	1426	0.6436200	0.6491375	1174	0.2792599	0.2816536	867
8	0.6865617	0.6801952	1456	0.6546055	0.6600235	1153	0.2840257	0.2863760	863
9	0.6737773	0.6673082	1485	0.6653911	0.6707081	1132	0.2887045	0.2910111	859
10	−0.6607885	−0.6542191	−1514	−0.6759741	−0.6811886	+1110	−0.2932955	−0.2955577	+855
11	0.6476001	0.6409317	1543	0.6863512	0.6914613	1088	0.2977974	0.3000144	850
12	0.6342147	0.6274497	1572	0.6965190	0.7015236	1065	0.3022085	0.3043797	845
13	0.6206371	0.6137771	1601	0.7064749	0.7113728	1042	0.3065278	0.3086528	840
14	0.6068703	0.5999171	1629	0.7162166	0.7210058	1019	0.3107542	0.3128321	834
15	−0.5929182	−0.5858741	−1657	−0.7257401	−0.7304190	+ 995	−0.3148862	−0.3169164	+828

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Date.	X True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Y True Equinox.		Reduc. to Mean Eq'x of Jan. 0.	Z True Equinox.		Reduc. to Mean Eq'x of Jan. 0.
	Noon.	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*	*Noon.*	*Midnight.*	*Noon.*
Nov. 16	−0.5787851	−0.5716516	−1685	−0.7350426	−0.7396103	+971	−0.3189224	−0.3209045	+822
17	0.5644743	0.5572537	1713	0.7441217	0.7485761	946	0.3228619	0.3247948	815
18	0.5499901	0.5426840	1740	0.7529735	0.7573136	920	0.3267029	0.3285861	808
19	0.5353360	0.5279468	1767	0.7615958	0.7658197	894	0.3304443	0.3322772	801
20	0.5205169	0.5130462	1793	0.7699851	0.7740917	868	0.3340847	0.3358668	793
21	−0.5055358	−0.4979865	−1819	−0.7781390	−0.7821263	+841	−0.3376232	−0.3393536	+785
22	0.4903985	0.4827722	1845	0.7860536	0.7899207	814	0.3410580	0.3427362	777
23	0.4751083	0.4674074	1870	0.7937271	0.7974723	786	0.3443881	0.3460133	768
24	0.4596702	0.4518970	1895	0.8011560	0.8047781	758	0.3476118	0.3491836	759
25	0.4440888	0.4362463	1920	0.8083380	0.8118352	729	0.3507285	0.3522461	750
26	−0.4283699	−0.4204599	−1944	−0.8152697	−0.8186414	+700	−0.3537365	−0.3551996	+740
27	0.4125173	0.4045429	1968	0.8219498	0.8251944	671	0.3566351	0.3580430	730
28	0.3965372	0.3885006	1991	0.8283750	0.8314911	641	0.3594230	0.3607751	720
29	0.3804339	0.3723378	2014	0.8345426	0.8375296	610	0.3620992	0.3633951	710
30	0.3642130	0.3560602	2036	0.8404515	0.8433082	579	0.3646626	0.3659019	699
Dec. 1	−0.3478801	−0.3396732	−2058	−0.8460995	−0.8488255	+548	−0.3671129	−0.3682954	+688
2	0.3314402	0.3231820	2079	0.8514855	0.8540790	516	0.3694493	0.3705743	676
3	0.3148991	0.3065922	2100	0.8566060	0.8590666	484	0.3716704	0.3727377	664
4	0.2982619	0.2899089	2121	0.8614607	0.8637883	451	0.3737760	0.3747856	652
5	0.2815339	0.2731374	2141	0.8660489	0.8682423	418	0.3757662	0.3767178	640
6	−0.2647201	−0.2562827	−2160	−0.8703683	−0.8724270	+385	−0.3776401	−0.3785327	+627
7	0.2478259	0.2393505	2179	0.8744182	0.8763418	351	0.3793960	0.3802302	614
8	0.2308570	0.2223458	2197	0.8781977	0.8799856	317	0.3810352	0.3818106	601
9	0.2138177	0.2052736	2215	0.8817054	0.8833571	283	0.3825565	0.3832729	587
10	0.1967138	0.1881388	2232	0.8849406	0.8864559	248	0.3839597	0.3846170	573
11	−0.1795494	−0.1709463	−2248	−0.8879030	−0.8892815	+213	−0.3852447	−0.3858426	+559
12	0.1623301	0.1537012	2264	0.8905913	0.8918323	177	0.3864110	0.3869493	545
13	0.1450604	0.1364086	2279	0.8930042	0.8941073	141	0.3874578	0.3879365	530
14	0.1277461	0.1190736	2294	0.8951412	0.8961061	104	0.3883854	0.3888041	515
15	0.1103916	0.1017009	2308	0.8970017	0.8978280	67	0.3891928	0.3895516	500
16	−0.0930021	−0.0842957	−2322	−0.8985850	−0.8992724	+ 30	−0.3898802	−0.3901788	+485
17	0.0755824	0.0668632	2335	0.8998903	0.9004385	− 8	0.3904472	0.3906853	469
18	0.0581384	0.0494083	2347	0.9009170	0.9013256	46	0.3908932	0.3910708	453
19	0.0406740	0.0319363	2358	0.9016642	0.9019327	84	0.3912181	0.3913349	437
20	0.0231958	−0.0144529	2369	0.9021310	0.9022592	122	0.3914212	0.3914772	421
21	−0.0057085	+0.0030364	−2379	−0.9023172	−0.9023048	−160	−0.3915028	−0.3914978	+404
22	+0.0117815	0.0205264	2388	0.9022224	0.9020695	199	0.3914622	0.3913961	387
23	0.0292701	0.0380116	2397	0.9018462	0.9015526	238	0.3912996	0.3911724	370
24	0.0467504	0.0554858	2405	0.9011886	0.9007543	277	0.3910146	0.3908263	353
25	0.0642171	0.0729438	2412	0.9002497	0.8996747	317	0.3906073	0.3903579	335
26	+0.0816649	+0.0903792	−2418	−0.8990293	−0.8983125	−357	−0.3900779	−0.3897673	+317
27	0.0990864	0.1077864	2423	0.8975275	0.8966712	397	0.3894262	0.3890546	299
28	0.1164779	0.1251600	2428	0.8957448	0.8947485	437	0.3886525	0.3882200	280
29	0.1338322	0.1424938	2432	0.8936823	0.8925461	477	0.3877573	0.3872641	261
30	0.1511440	0.1597818	2435	0.8913402	0.8900647	518	0.3867406	0.3861869	242
31	+0.1684069	+0.1770187	−2437	−0.8887194	−0.8873051	−559	−0.3856029	−0.3849888	+223
32	+0.1856164	+0.1941995	−2439	−0.8858214	−0.8842684	−600	−0.3843447	−0.3836706	+204

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JANUARY.		Day of Month.	FEBRUARY.		Day of Month.	MARCH.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
	° ′ ″	° ′ ″		° ′ ″	° ′ ″		° ′ ″	° ′ ″
1.0	219 52 50.1	—2 3 38.2	1.0	264 16 41.9	—4 48 53.4	1.0	272 29 24.4	—5 9 14.4
1.5	225 54 7.1	2 31 50.1	1.5	270 11 50.3	4 57 2.4	1.5	278 25 16.4	5 12 11.4
2.0	231 53 18.8	2 58 9.3	2.0	276 7 33.8	5 1 59.9	2.0	284 21 49.0	5 11 47.8
2.5	237 50 54.9	3 22 22.1	2.5	282 4 12.5	5 3 41.8	2.5	290 19 31.1	5 8 2.0
3.0	243 47 22.6	3 44 15.8	3.0	288 2 4.0	5 2 5.0	3.0	296 18 49.2	5 0 53.6
3.5	249 43 6.0	—4 3 38.9	3.5	294 1 23.4	—4 57 8.2	3.5	302 20 6.9	—4 50 23.6
4.0	255 38 26.3	4 20 20.9	4.0	300 2 22.9	4 48 51.4	4.0	308 23 45.1	4 36 34.5
4.5	261 33 41.5	4 34 12.3	4.5	306 5 12.1	4 37 17.0	4.5	314 30 1.2	4 19 30.4
5.0	267 29 7.1	4 45 4.9	5.0	312 9 59.1	4 22 29.2	5.0	320 39 9.6	3 59 17.8
5.5	273 24 56.2	4 52 51.8	5.5	318 16 50.3	4 4 34.3	5.5	326 51 21.6	3 36 5.5
6.0	279 21 20.1	—4 57 27.6	6.0	324 25 51.3	—3 43 40.8	6.0	333 6 45.8	—3 10 4.9
6.5	285 18 28.2	4 58 48.6	6.5	330 37 7.4	3 19 59.5	6.5	339 25 27.8	2 41 30.1
7.0	291 16 29.1	4 56 52.5	7.0	336 50 43.5	2 53 44.2	7.0	345 47 30.6	2 10 38.1
7.5	297 15 30.7	4 51 38.9	7.5	343 6 45.4	2 25 10.0	7.5	352 12 55.0	1 37 49.2
8.0	303 15 41.1	4 43 9.6	8.0	349 25 19.7	1 54 34.9	8.0	358 41 40.0	1 3 25.6
8.5	309 17 9.0	—4 31 27.4	8.5	355 46 34.0	—1 22 18.8	8.5	5 13 43.2	—0 27 53.0
9.0	315 20 4.0	4 16 38.0	9.0	2 10 38.1	0 48 43.5	9.0	11 49 0.9	+0 8 21.0
9.5	321 24 37.3	3 58 47.9	9.5	8 37 43.0	—0 14 12.5	9.5	18 27 28.9	0 44 47.0
10.0	327 31 2.3	3 38 6.3	10.0	15 8 1.0	+0 20 49.0	10.0	25 9 2.3	1 20 54.1
10.5	333 39 34.5	3 14 43.8	10.5	21 41 46.1	0 55 54.4	10.5	31 53 36.1	1 56 10.7
11.0	339 50 32.0	—2 48 52.6	11.0	28 19 12.6	+1 30 35.8	11.0	38 41 5.4	+2 30 4.7
11.5	346 4 15.3	2 20 47.0	11.5	35 0 35.1	2 4 24.3	11.5	45 31 24.9	3 2 4.7
12.0	352 21 7.5	1 50 42.7	12.0	41 46 7.5	2 36 50.2	12.0	52 24 29.2	3 31 39.8
12.5	358 41 33.7	1 18 57.3	12.5	48 36 1.8	3 7 23.4	12.5	59 20 12.5	3 58 20.7
13.0	5 6 0.5	0 45 50.6	13.0	55 30 27.1	3 35 33.2	13.0	66 18 28.1	4 21 40.2
13.5	11 34 55.5	—0 11 44.1	13.5	62 29 28.1	+4 0 49.7	13.5	73 19 8.1	+4 41 13.6
14.0	18 8 46.3	+0 22 58.4	14.0	69 33 4.2	4 22 43.7	14.0	80 22 3.0	4 56 39.4
14.5	24 47 59.4	0 57 50.9	14.5	76 41 8.1	4 40 47.8	14.5	87 27 0.6	5 7 39.4
15.0	31 32 58.9	1 32 24.9	15.0	83 53 24.7	4 54 37.2	15.0	94 33 46.7	5 14 0.0
15.5	38 24 4.7	2 6 9.9	15.5	91 9 30.1	5 3 50.7	15.5	101 42 3.5	5 15 31.9
16.0	45 21 31.0	+2 38 33.2	16.0	98 28 51.8	+5 8 11.7	16.0	108 51 30.3	+5 12 10.6
16.5	52 25 24.5	3 9 0.3	16.5	105 50 48.6	5 7 29.7	16.5	116 1 42.7	5 3 57.3
17.0	59 35 42.2	3 36 55.6	17.0	113 14 31.6	5 1 40.6	17.0	123 12 13.4	4 50 58.6
17.5	66 52 9.8	4 1 43.7	17.5	120 39 4.9	4 50 48.0	17.5	130 22 32.2	4 33 27.2
18.0	74 14 20.8	4 22 49.7	18.0	128 3 28.5	4 35 2.8	18.0	137 32 6.6	4 11 40.8
18.5	81 41 35.4	+4 39 42.4	18.5	135 26 40.3	+4 14 43.5	18.5	144 40 22.6	+3 46 2.6
19.0	89 13 0.6	4 51 54.5	19.0	142 47 38.8	3 50 15.5	19.0	151 46 45.7	3 17 0.5
19.5	96 47 31.9	4 59 4.7	19.5	150 5 25.5	3 22 10.0	19.5	158 50 41.9	2 45 6.1
20.0	104 23 54.7	5 0 59.3	20.0	157 19 7.0	2 51 2.4	20.0	165 51 38.8	2 10 53.9
20.5	112 0 47.5	4 57 33.4	20.5	164 27 57.8	2 17 30.9	20.5	172 49 6.4	1 35 0.2
21.0	119 36 46.2	+4 48 51.5	21.0	171 31 20.4	+1 42 15.1	21.0	179 42 38.2	+0 58 2.0
21.5	127 10 27.5	4 35 7.1	21.5	178 28 47.4	1 5 54.0	21.5	186 31 52.2	+0 20 35.6
22.0	134 40 32.4	4 16 42.0	22.0	185 20 1.3	+0 29 5.2	22.0	193 16 31.6	—0 16 44.0
22.5	142 5 51.3	3 54 5.2	22.5	192 4 53.7	—0 7 36.6	22.5	199 56 24.3	0 53 23.8
23.0	149 25 25.7	3 27 50.5	23.0	198 43 25.6	0 43 39.8	23.0	206 31 24.0	1 28 54.3
23.5	156 38 29.3	+2 58 35.2	23.5	205 15 46.1	—1 18 36.4	23.5	213 1 29.9	—2 2 48.9
24.0	163 44 29.6	2 26 58.0	24.0	211 42 11.4	1 52 2.2	24.0	219 26 46.6	2 34 44.7
24.5	170 43 8.2	1 53 37.3	24.5	218 3 3.5	2 23 36.7	24.5	225 47 24.1	3 4 22.1
25.0	177 34 18.8	1 19 10.0	25.0	224 18 49.5	2 53 2.3	25.0	232 3 36.9	3 31 24.9
25.5	184 18 7.0	0 44 10.1	25.5	230 30 0.4	3 20 4.5	25.5	238 15 43.7	3 55 40.1
26.0	190 54 47.7	+0 9 8.8	26.0	236 37 9.6	—3 44 31.2	26.0	244 24 7.2	—4 16 57.3
26.5	197 24 44.1	—0 25 25.9	26.5	242 40 52.7	4 6 12.6	26.5	250 29 13.5	4 35 8.6
27.0	203 48 25.5	0 59 9.2	27.0	248 41 46.6	4 25 0.4	27.0	256 31 31.3	4 50 7.4
27.5	210 6 25.5	1 31 39.7	27.5	254 40 28.2	4 40 47.8	27.5	262 31 31.7	5 1 49.9
28.0	216 19 21.2	2 2 38.8	28.0	260 37 34.4	4 53 29.0	28.0	268 29 47.3	5 10 12.8
28.5	222 27 51.0	2 31 50.0	28.5	266 33 41.5	5 2 59.2	28.5	274 26 52.4	5 15 14.1
29.0	228 32 34.5	—2 58 59.1	29.0	272 29 24.4	—5 9 14.4	29.0	280 23 21.5	—5 16 52.5
29.5	234 34 10.8	3 23 53.5	29.5	278 25 16.4	5 12 11.4	29.5	286 19 49.9	5 15 7.8
30.0	240 33 18.3	3 46 22.1	30.0	284 21 49.0	5 11 47.8	30.0	292 16 52.7	5 10 0.5
30.5	246 30 33.7	4 6 14.8	30.5	290 19 31.1	5 8 2.0	30.5	298 15 4.3	5 1 31.8
31.0	252 26 31.7	4 23 22.9	31.0	296 18 49.2	5 0 53.6	31.0	304 14 57.8	4 49 43.5
31.5	258 21 44.5	—4 37 38.1	31.5	302 20 6.9	—4 50 23.6	31.5	310 17 5.3	—4 34 39.3

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	APRIL.		Day of Month.	MAY.		Day of Month.	JUNE.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
	° ′ ″	° ′ ″		° ′ ″	° ′ ″		° ′ ″	° ′ ″
1.0	316 21 56.8	−4 16 23.5	1.0	349 11 3.0	−1 51 29.8	1.0	37 26 52.4	+2 27 58.8
1.5	322 29 59.7	3 55 2.4	1.5	355 37 36.5	1 17 55.2	1.5	44 33 13.3	2 59 43.3
2.0	328 41 38.9	3 30 44.4	2.0	2 9 50.8	0 42 51.3	2.0	51 46 3.2	3 29 2.7
2.5	334 57 15.2	3 3 40.0	2.5	8 47 59.5	−0 6 42.7	2.5	59 4 46.9	3 55 18.9
3.0	341 17 6.5	2 34 2.5	3.0	15 32 9.7	+0 30 2.2	3.0	66 28 36.8	4 17 55.5
3.5	347 41 25.8	−2 2 8.5	3.5	22 22 20.1	+1 6 51.8	3.5	73 56 34.5	+4 36 19.9
4.0	354 10 21.8	1 28 17.6	4.0	29 18 21.5	1 43 11.4	4.0	81 27 32.3	4 50 4.6
4.5	0 43 58.4	0 52 52.6	4.5	36 19 56.1	2 18 24.3	4.5	89 0 16.6	4 58 49.2
5.0	7 22 14.5	−0 16 19.9	5.0	43 26 37.1	2 51 51.7	5.0	96 33 30.1	5 2 21.4
5.5	14 5 4.1	+0 20 50.8	5.5	50 37 49.2	3 22 55.2	5.5	104 5 56.5	5 0 37.6
6.0	20 52 16.2	+0 58 7.5	6.0	57 52 49.7	+3 50 57.6	6.0	111 36 22.9	+4 53 42.6
6.5	27 43 35.2	1 34 55.7	6.5	65 10 49.7	4 15 24.3	6.5	119 3 43.9	4 41 49.7
7.0	34 38 41.0	2 10 39.9	7.0	72 30 55.8	4 35 45.1	7.0	126 27 3.2	4 25 19.3
7.5	41 37 10.4	2 44 44.0	7.5	79 52 12.2	4 51 35.4	7.5	133 45 35.8	4 4 37.1
8.0	48 38 36.8	3 16 32.5	8.0	87 13 42.9	5 2 36.9	8.0	140 58 48.2	3 40 13.3
8.5	55 42 31.8	+3 45 31.5	8.5	94 34 34.1	+5 8 38.3	8.5	148 6 18.7	+3 12 40.6
9.0	62 48 25.4	4 11 10.1	9.0	101 53 55.4	5 9 35.7	9.0	155 7 56.2	2 42 33.2
9.5	69 55 47.4	4 33 0.7	9.5	109 11 3.4	5 5 32.3	9.5	162 3 39.3	2 10 25.4
10.0	77 4 7.9	4 50 40.0	10.0	116 25 19.9	4 56 37.5	10.0	168 53 34.8	1 36 50.7
10.5	84 12 58.2	5 3 49.7	10.5	123 36 15.2	4 43 6.3	10.5	175 37 55.8	1 2 21.2
11.0	91 21 51.1	+5 12 17.0	11.0	130 43 27.2	+4 25 18.7	11.0	182 17 0.1	+0 27 27.5
11.5	98 30 21.7	5 15 54.2	11.5	137 46 40.7	4 3 38.3	11.5	188 51 8.7	−0 7 21.9
12.0	105 38 7.4	5 14 39.0	12.0	144 45 47.6	3 38 31.8	12.0	195 20 44.7	0 41 40.4
12.5	112 44 48.0	5 8 34.5	12.5	151 40 45.2	3 10 27.4	12.5	201 46 11.7	1 15 3.5
13.0	119 50 5.6	4 57 49.2	13.0	158 31 35.7	2 39 54.9	13.0	208 7 53.2	1 47 8.8
13.5	126 53 44.5	+4 42 35.7	13.5	165 18 25.0	+2 7 24.7	13.5	214 26 11.6	−2 17 35.8
14.0	133 55 30.9	4 23 11.3	14.0	172 1 21.4	1 33 27.3	14.0	220 41 27.8	2 46 6.0
14.5	140 55 12.6	3 59 57.0	14.5	178 40 34.6	0 58 32.9	14.5	226 54 0.9	3 12 22.9
15.0	147 52 38.5	3 33 17.1	15.0	185 16 15.3	+0 23 11.2	15.0	233 4 8.0	3 36 11.5
15.5	154 47 38.4	3 3 39.1	15.5	191 48 34.2	−0 12 9.2	15.5	239 12 4.0	3 57 18.9
16.0	161 40 2.9	+2 31 32.4	16.0	198 17 41.4	−0 47 0.8	16.0	245 18 1.9	−4 15 33.9
16.5	168 29 42.8	1 57 28.4	16.5	204 43 46.1	1 20 57.7	16.5	251 22 13.3	4 30 47.9
17.0	175 16 29.3	1 21 59.5	17.0	211 6 56.4	1 53 35.4	17.0	257 24 48.1	4 42 53.7
17.5	182 0 14.3	0 45 38.2	17.5	217 27 19.5	2 24 31.7	17.5	263 25 55.5	4 51 45.9
18.0	188 40 49.9	+0 8 57.0	18.0	223 45 1.5	2 53 26.2	18.0	269 25 44.4	4 57 21.2
18.5	195 18 8.8	−0 27 32.3	18.5	230 0 8.0	−3 20 0.6	18.5	275 24 23.6	−4 59 38.4
19.0	201 52 5.1	1 3 19.7	19.0	236 12 44.1	3 43 59.2	19.0	281 22 2.6	4 58 37.8
19.5	208 22 33.8	1 37 57.1	19.5	242 22 55.1	4 5 8.7	19.5	287 18 51.6	4 54 21.6
20.0	214 49 31.6	2 10 58.7	20.0	248 30 46.6	4 23 18.2	20.0	293 15 2.9	4 46 53.6
20.5	221 12 57.6	2 42 1.6	20.5	254 36 25.5	4 38 18.9	20.5	299 10 50.1	4 36 18.9
21.0	227 32 53.0	−3 10 45.5	21.0	260 39 59.7	−4 50 4.8	21.0	305 6 29.6	−4 22 44.2
21.5	233 49 21.3	3 36 53.6	21.5	266 41 38.8	4 58 32.0	21.5	311 2 19.8	4 6 17.3
22.0	240 2 29.2	4 0 11.8	22.0	272 41 34.8	5 3 38.2	22.0	316 58 42.0	3 47 7.5
22.5	246 12 26.5	4 20 28.6	22.5	278 40 2.3	5 5 23.2	22.5	322 56 0.6	3 25 24.6
23.0	252 19 25.9	4 37 35.5	23.0	284 37 18.1	5 3 48.3	23.0	328 54 42.1	3 1 19.6
23.5	258 23 43.4	−4 51 26.2	23.5	290 33 41.7	−4 58 56.4	23.5	334 55 16.3	−2 35 4.9
24.0	264 25 37.9	5 1 56.6	24.0	296 29 35.9	4 50 51.5	24.0	340 58 15.2	2 6 53.6
24.5	270 25 31.3	5 9 4.3	24.5	302 25 26.1	4 39 38.5	24.5	347 4 12.7	1 37 0.2
25.0	276 23 48.8	5 12 48.4	25.0	308 21 40.1	4 25 23.5	25.0	353 13 44.6	1 5 40.6
25.5	282 20 57.5	5 13 9.3	25.5	314 18 48.7	4 8 18.4	25.5	359 27 27.8	−0 33 12.1
26.0	288 17 27.2	−5 10 8.6	26.0	320 17 24.8	−3 48 16.2	26.0	5 45 59.1	+0 0 6.0
26.5	294 13 49.4	5 3 48.6	26.5	326 18 3.2	3 25 40.6	26.5	12 9 54.6	0 33 52.4
27.0	300 10 37.9	4 54 12.4	27.0	332 21 20.3	3 0 36.5	27.0	18 39 49.0	1 7 43.5
27.5	306 8 27.3	4 41 24.1	27.5	338 27 53.5	2 33 15.0	27.5	25 16 12.6	1 41 12.9
28.0	312 7 53.2	4 25 28.6	28.0	344 38 20.3	2 3 49.2	28.0	31 59 31.7	2 13 52.2
28.5	318 9 31.6	4 6 31.6	28.5	350 53 18.3	1 32 33.6	28.5	38 50 5.4	2 45 10.3
29.0	324 13 58.2	−3 44 40.2	29.0	357 13 23.2	−0 59 44.9	29.0	45 48 3.9	+3 14 33.7
29.5	330 21 48.3	3 20 3.1	29.5	3 39 8.3	−0 25 42.6	29.5	52 53 27.3	3 41 27.6
30.0	336 33 35.1	2 52 50.2	30.0	10 11 3.8	+0 9 10.9	30.0	60 6 3.3	4 5 16.9
30.5	342 49 50.8	2 23 14.1	30.5	16 49 34.1	0 44 30.1	30.5	67 25 25.9	4 25 26.7
31.0	349 11 3.0	1 51 29.8	31.0	23 34 57.4	1 19 46.3	31.0	74 50 55.2	4 41 25.0
31.5	355 37 36.5	−1 17 55.2	31.5	30 27 23.5	+1 54 27.5	31.5	82 21 37.5	+4 52 43.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	JULY.		Day of Month.	AUGUST.		Day of Month.	SEPTEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	74° 50′ 55″.2	+4° 41′ 25″.0	1.0	128° 55′ 57″.2	+4° 6′ 7″.9	1.0	181° 34′ 3″.4	−0° 1′ 57″.4
1.5	82 21 37.5	4 52 43.5	1.5	136 31 33.0	3 39 58.3	1.5	188 38 24.5	0 40 48.3
2.0	89 56 25.9	4 59 0.2	2.0	144 4 6.8	3 10 5.7	2.0	195 36 34.7	1 18 29.6
2.5	97 34 4.1	5 0 0.5	2.5	151 32 29.9	2 37 10.5	2.5	202 28 21.8	1 54 28.7
3.0	105 13 8.3	4 55 38.7	3.0	158 55 43.4	2 1 56.0	3.0	209 13 42.6	2 28 17.8
3.5	112 52 11.1	+4 45 58.8	3.5	166 13 0.4	+1 25 6.4	3.5	215 52 42.3	−2 59 34.1
4.0	120 29 46.2	4 31 14.0	4.0	173 23 46.9	0 47 25.2	4.0	222 25 33.2	3 27 59.5
4.5	128 4 33.1	4 11 45.9	4.5	180 27 41.4	+0 9 33.5	4.5	228 52 33.7	3 53 20.1
5.0	135 35 19.1	3 48 3.9	5.0	187 24 34.5	−0 27 51.4	5.0	235 14 7.1	4 15 25.6
5.5	143 1 3.3	3 20 42.8	5.5	194 14 26.8	1 4 16.3	5.5	241 30 40.9	4 34 8.8
6.0	150 20 57.3	+2 50 20.6	6.0	200 57 28.8	−1 39 12.1	6.0	247 42 45.1	−4 49 25.3
6.5	157 34 26.6	2 17 37.4	6.5	207 33 57.9	2 12 14.3	6.5	253 50 51.8	5 1 12.7
7.0	164 41 10.2	1 43 12.8	7.0	214 4 17.5	2 43 2.5	7.0	259 55 34.9	5 9 30.2
7.5	171 40 59.2	1 7 45.3	7.5	220 28 55.2	3 11 20.0	7.5	265 57 27.7	5 14 18.3
8.0	178 33 55.8	+0 31 51.2	8.0	226 48 21.9	3 36 53.1	8.0	271 57 4.3	5 15 38.6
8.5	185 20 11.2	−0 3 56.7	8.5	233 3 9.9	−3 59 31.3	8.5	277 54 58.1	−5 13 33.7
9.0	192 0 3.7	0 39 8.6	9.0	239 13 52.3	4 19 5.8	9.0	283 51 41.0	5 8 7.2
9.5	198 33 57.2	1 13 17.7	9.5	245 21 2.4	4 35 30.4	9.5	289 47 44.3	4 59 23.6
10.0	205 2 19.0	1 46 0.8	10.0	251 25 12.5	4 48 40.3	10.0	295 43 37.3	4 47 27.9
10.5	211 25 38.7	2 16 57.7	10.5	257 26 53.9	4 58 31.9	10.5	301 39 47.2	4 32 26.4
11.0	217 44 26.9	−2 45 50.6	11.0	263 26 36.0	−5 5 3.4	11.0	307 36 39.6	−4 14 26.8
11.5	223 59 14.4	3 12 24.0	11.5	269 24 46.3	5 8 13.6	11.5	313 34 37.7	3 53 37.5
12.0	230 10 30.8	3 36 25.0	12.0	275 21 50.5	5 8 3.1	12.0	319 34 2.7	3 30 9.1
12.5	236 18 44.2	3 57 42.3	12.5	281 18 11.7	5 4 33.0	12.5	325 35 13.6	3 4 13.6
13.0	242 24 21.2	4 16 6.3	13.0	287 14 11.1	4 57 46.2	13.0	331 38 27.0	2 36 4.4
13.5	248 27 46.3	−4 31 29.0	13.5	293 10 7.9	−4 47 46.7	13.5	337 43 57.5	−2 5 57.1
14.0	254 29 21.0	4 43 44.2	14.0	299 6 18.6	4 34 40.0	14.0	343 51 57.8	1 34 9.7
14.5	260 29 24.9	4 52 47.1	14.5	305 2 59.5	4 18 32.9	14.5	350 2 38.8	1 1 1.5
15.0	266 28 15.4	4 58 34.2	15.0	311 0 24.0	3 59 33.7	15.0	356 16 9.8	−0 26 53.8
15.5	272 26 8.1	5 1 3.9	15.5	316 58 45.4	3 37 52.8	15.5	2 32 38.4	+0 7 50.4
16.0	278 23 16.5	−5 0 16.0	16.0	322 58 15.9	−3 13 42.0	16.0	8 52 11.6	+0 42 46.3
16.5	284 19 52.7	4 56 11.9	16.5	328 59 7.2	2 47 14.6	16.5	15 14 54.6	1 17 27.8
17.0	290 16 8.3	4 48 54.6	17.0	335 1 31.4	2 18 45.7	17.0	21 40 52.5	1 51 28.4
17.5	296 12 14.2	4 38 28.6	17.5	341 5 40.6	1 48 32.0	17.5	28 10 9.4	2 24 20.1
18.0	302 8 21.4	4 25 0.3	18.0	347 11 47.6	1 16 51.8	18.0	34 42 49.0	2 55 35.5
18.5	308 4 41.2	−4 8 37.5	18.5	353 20 6.4	−0 44 4.5	18.5	41 18 54.6	+3 24 47.1
19.0	314 1 25.9	3 49 29.5	19.0	359 30 51.6	−0 10 31.1	19.0	47 58 28.7	3 51 28.0
19.5	319 58 49.1	3 27 47.1	19.5	5 44 19.8	+0 23 26.5	19.5	54 41 33.8	4 15 12.2
20.0	325 57 6.4	3 3 42.2	20.0	12 0 48.2	0 57 25.2	20.0	61 28 10.7	4 35 35.4
20.5	331 56 34.8	2 37 28.4	20.5	18 20 35.3	1 31 0.8	20.5	68 18 19.6	4 52 15.2
21.0	337 57 34.0	−2 9 20.1	21.0	24 44 1.0	+2 3 48.5	21.0	75 11 59.1	+5 4 51.8
21.5	344 0 25.8	1 39 33.3	21.5	31 11 25.0	2 35 22.7	21.5	82 9 5.5	5 13 7.9
22.0	350 5 34.5	1 8 24.8	22.0	37 43 7.5	3 5 17.4	22.0	89 9 32.5	5 16 49.8
22.5	356 13 26.5	0 36 12.8	22.5	44 19 27.6	3 33 5.9	22.5	96 13 11.2	5 15 47.7
23.0	2 24 30.3	−0 3 16.5	23.0	51 0 43.0	3 58 21.5	23.0	103 19 48.6	5 9 56.3
23.5	8 39 16.0	+0 30 3.4	23.5	57 47 8.3	+4 20 37.8	23.5	110 29 7.8	+4 59 15.3
24.0	14 58 15.1	1 3 24.9	24.0	64 38 54.6	4 39 28.8	24.0	117 40 47.7	4 43 49.7
24.5	21 21 58.6	1 36 24.4	24.5	71 36 7.8	4 54 29.9	24.5	124 54 22.6	4 23 50.4
25.0	27 50 57.7	2 8 37.0	25.0	78 38 47.4	5 5 17.7	25.0	132 9 22.7	3 59 34.2
25.5	34 25 41.2	2 39 36.3	25.5	85 46 45.5	5 11 32.8	25.5	139 25 13.9	3 31 23.9
26.0	41 6 35.5	+3 8 54.1	26.0	92 59 46.0	+5 12 58.6	26.0	146 41 18.8	+2 59 47.5
26.5	47 54 1.6	3 36 1.0	26.5	100 17 23.0	5 9 23.7	26.5	153 56 57.2	2 25 18.3
27.0	54 48 14.8	4 0 26.6	27.0	107 39 1.5	5 0 42.6	27.0	161 11 27.5	1 48 33.7
27.5	61 49 21.9	4 21 40.4	27.5	115 3 57.6	4 46 56.8	27.5	168 24 7.3	1 10 13.8
28.0	68 57 19.8	4 39 12.1	28.0	122 31 19.2	4 28 15.4	28.0	175 34 15.5	+0 31 0.5
28.5	76 11 54.4	4 52 33.2	28.5	130 0 7.6	4 4 55.3	28.5	182 41 13.2	−0 8 24.5
29.0	83 32 38.8	+5 1 18.6	29.0	137 29 18.9	+3 37 21.1	29.0	189 44 24.5	−0 47 20.6
29.5	90 58 53.1	5 5 7.1	29.5	144 57 48.0	3 6 4.8	29.5	196 43 18.2	1 25 9.7
30.0	98 29 44.5	5 3 44.2	30.0	152 24 29.2	2 31 43.9	30.0	203 37 28.5	2 1 17.3
30.5	106 4 9.1	4 57 2.6	30.5	159 48 20.5	1 55 0.7	30.5	210 26 35.6	2 35 13.1
31.0	113 40 53.1	4 45 4.0	31.0	167 8 24.9	1 16 39.6	31.0	217 10 26.0	3 6 31.8
31.5	121 18 36.6	+4 27 59.2	31.5	174 23 52.9	+0 37 25.5	31.5	223 48 52.5	−3 34 52.5

FOR GREENWICH MEAN NOON AND MIDNIGHT.

Day of Month.	OCTOBER.		Day of Month.	NOVEMBER.		Day of Month.	DECEMBER.	
	True Longitude.	Latitude.		True Longitude.	Latitude.		True Longitude.	Latitude.
1.0	217° 10′ 26″.0	−3° 6′ 31″.8	1.0	263° 35′ 9″.8	−5° 7′ 34″.8	1.0	295° 50′ 30″.2	−4° 27′ 28″.3
1.5	223 48 52.5	3 34 52.5	1.5	269 43 59.0	5 9 45.8	1.5	301 47 18.1	4 11 29.4
2.0	230 21 54.7	3 59 59.1	2.0	275 49 25.4	5 8 24.3	2.0	307 42 41.6	3 52 50.2
2.5	236 49 38.6	4 21 40.1	2.5	281 51 52.2	5 3 36.7	2.5	313 37 10.2	3 31 42.6
3.0	243 12 15.5	4 39 47.7	3.0	287 51 46.6	4 55 30.4	3.0	319 31 16.7	3 8 19.1
3.5	249 30 2.3	−4 54 17.6	3.5	293 49 38.9	−4 44 14.0	3.5	325 25 36.4	−2 42 52.4
4.0	255 43 20.1	5 5 8.1	4.0	299 46 1.9	4 29 56.4	4.0	331 20 46.9	2 15 35.8
4.5	261 52 34.1	5 12 20.1	4.5	305 41 30.9	4 12 47.2	4.5	337 17 28.1	1 46 43.3
5.0	267 58 13.1	5 15 55.8	5.0	311 36 43.1	3 52 56.3	5.0	343 16 21.2	1 16 29.4
5.5	274 0 48.0	5 15 59.1	5.5	317 32 16.4	3 30 34.2	5.5	349 18 7.7	0 45 9.6
6.0	280 0 51.8	−5 12 34.8	6.0	323 28 49.8	−3 5 52.2	6.0	355 23 29.4	−0 13 0.7
6.5	285 58 59.3	5 5 48.7	6.5	329 27 2.4	2 39 2.1	6.5	1 33 7.2	+0 19 38.9
7.0	291 55 45.8	4 55 47.1	7.0	335 27 32.7	2 10 16.9	7.0	7 47 40.4	0 52 29.2
7.5	297 51 46.7	4 42 37.2	7.5	341 30 58.3	1 39 50.8	7.5	14 7 45.2	1 25 8.1
8.0	303 47 37.7	4 26 26.5	8.0	347 37 54.8	1 7 59.6	8.0	20 33 53.6	1 57 11.4
8.5	309 43 53.7	−4 7 23.4	8.5	353 48 55.4	−0 35 1.1	8.5	27 6 32.1	+2 28 12.6
9.0	315 41 8.7	3 45 37.1	9.0	0 4 29.9	−0 1 14.9	9.0	33 46 0.3	2 57 43.1
9.5	321 39 55.0	3 21 18.1	9.5	6 25 4.1	+0 32 56.9	9.5	40 32 29.2	3 25 12.7
10.0	327 40 43.2	2 54 37.9	10.0	12 50 58.5	1 7 9.9	10.0	47 26 0.1	3 50 10.0
10.5	333 44 1.4	2 25 49.7	10.5	19 22 27.6	1 40 57.3	10.5	54 26 22.9	4 12 3.2
11.0	339 50 15.3	−1 55 8.6	11.0	25 59 39.2	+2 13 50.0	11.0	61 33 16.0	+4 30 21.4
11.5	345 59 47.5	1 22 51.6	11.5	32 42 33.7	2 45 17.3	11.5	68 46 5.9	4 44 36.2
12.0	352 12 57.0	0 49 17.4	12.0	39 31 3.3	3 14 47.3	12.0	76 4 7.2	4 54 22.8
12.5	358 29 59.1	−0 14 47.7	12.5	46 24 52.1	3 41 47.8	12.5	83 26 24.8	4 59 21.5
13.0	4 51 5.4	+0 20 14.1	13.0	53 23 36.3	4 5 47.3	13.0	90 51 55.0	4 59 19.6
13.5	11 16 23.1	+0 55 22.1	13.5	60 26 44.4	+4 26 16.0	13.5	98 19 28.9	+4 54 11.8
14.0	17 45 55.4	1 30 8.7	14.0	67 33 38.8	4 42 47.5	14.0	105 47 55.1	4 44 1.2
14.5	24 19 40.8	2 4 4.8	14.5	74 43 36.3	4 54 59.4	14.5	113 16 3.4	4 28 58.7
15.0	30 57 33.9	2 36 40.3	15.0	81 55 50.4	5 2 34.4	15.0	120 42 47.4	4 9 23.0
15.5	37 39 25.3	3 7 24.7	15.5	89 9 33.2	5 5 21.3	15.5	128 7 7.6	3 45 39.9
16.0	44 25 1.9	+3 35 47.7	16.0	96 23 57.3	+5 3 15.2	16.0	135 28 13.7	+3 18 19.8
16.5	51 14 7.7	4 1 20.3	16.5	103 38 17.8	4 56 18.0	16.5	142 45 24.9	2 47 57.1
17.0	58 6 24.1	4 23 35.3	17.0	110 51 53.5	4 44 37.8	17.0	149 58 11.3	2 15 8.8
17.5	65 1 30.7	4 42 8.4	17.5	118 4 8.7	4 28 28.5	17.5	157 6 13.5	1 40 32.6
18.0	71 59 6.0	4 56 38.4	18.0	125 14 33.8	4 8 8.9	18.0	164 9 21.4	1 4 45.6
18.5	78 58 48.3	+5 6 48.2	18.5	132 22 45.3	+3 44 2.6	18.5	171 7 32.9	+0 28 23.9
19.0	86 0 15.7	5 12 24.9	19.0	139 28 26.2	3 16 36.4	19.0	178 0 52.9	−0 7 58.1
19.5	93 3 7.4	5 13 20.5	19.5	146 31 25.2	2 46 20.0	19.5	184 49 31.7	0 43 48.6
20.0	100 7 3.5	5 9 31.9	20.0	153 31 36.1	2 13 44.6	20.0	191 33 42.7	1 18 38.1
20.5	107 11 45.6	5 1 0.9	20.5	160 28 56.6	1 39 22.7	20.5	198 13 42.0	1 52 0.2
21.0	114 16 56.6	+4 47 54.3	21.0	167 23 27.4	+1 3 47.5	21.0	204 49 46.4	−2 23 30.8
21.5	121 22 20.7	4 30 23.5	21.5	174 15 10.9	+0 27 31.8	21.5	211 22 12.7	2 52 48.6
22.0	128 27 43.3	4 8 44.7	22.0	181 4 10.7	−0 8 51.9	22.0	217 51 17.0	3 19 34.7
22.5	135 32 50.5	3 43 18.4	22.5	187 50 30.2	0 44 51.9	22.5	224 17 13.9	3 43 33.2
23.0	142 37 28.5	3 14 29.0	23.0	194 34 11.9	1 19 58.0	23.0	230 40 15.9	4 4 30.4
23.5	149 41 23.6	+2 42 44.6	23.5	201 15 17.2	−1 53 41.6	23.5	237 0 33.7	−4 22 15.2
24.0	156 44 21.4	2 8 36.1	24.0	207 53 46.0	2 25 36.4	24.0	243 18 15.8	4 36 39.0
24.5	163 46 6.6	1 32 37.0	24.5	214 29 36.2	2 55 18.1	24.5	249 33 28.9	4 47 35.7
25.0	170 46 23.0	0 55 22.5	25.0	221 2 44.5	3 22 25.3	25.0	255 46 18.3	4 55 1.8
25.5	177 44 53.2	+0 17 28.9	25.5	227 33 6.2	3 46 39.6	25.5	261 56 48.1	4 58 56.0
26.0	184 41 18.6	−0 20 27.1	26.0	234 0 36.1	−4 7 45.7	26.0	268 5 2.0	−4 59 19.5
26.5	191 35 19.8	0 57 50.0	26.5	240 25 8.4	4 25 31.6	26.5	274 11 3.8	4 56 15.9
27.0	198 26 37.0	1 34 5.6	27.0	246 46 38.2	4 39 48.7	27.0	280 14 58.0	4 49 50.5
27.5	205 14 51.1	2 8 42.0	27.5	253 5 1.9	4 50 31.4	27.5	286 16 50.0	4 40 10.8
28.0	211 59 43.6	2 41 10.2	28.0	259 20 17.7	4 57 37.5	28.0	292 16 47.3	4 27 25.9
28.5	218 40 57.5	3 11 5.0	28.5	265 32 26.0	5 1 7.3	28.5	298 14 59.6	4 11 46.5
29.0	225 18 18.7	−3 38 5.1	29.0	271 41 30.6	−5 1 3.9	29.0	304 11 38.9	−3 53 24.3
29.5	231 51 35.9	4 1 53.4	29.5	277 47 38.7	4 57 32.4	29.5	310 7 0.5	3 32 32.1
30.0	238 20 41.4	4 22 17.0	30.0	283 51 0.9	4 50 40.0	30.0	316 1 22.7	3 9 23.8
30.5	244 45 32.1	4 39 6.6	30.5	289 51 51.9	4 40 35.4	30.5	321 55 6.7	2 44 13.4
31.0	251 6 9.1	4 52 17.1	31.0	295 50 30.2	4 27 28.3	31.0	327 48 37.4	2 17 15.8
31.5	257 22 38.2	−5 1 46.3	31.5	301 47 18.1	−4 11 29.4	31.5	333 42 22.7	−1 48 46.3

FOR GREENWICH MEAN NOON.

Date.		THE MOON'S EQUATOR.			☾ Mean Longitude of the Moon.
		i Inclination to the Earth's Equator.	Δ Ascend'g Node on Earth's Equator to Ascending Node on Ecliptic.	☊′ Ascend'g Node on Earth's Equator.	
Jan.	0	22° 1′.7	196° 9′.4	358° 57′.9	200° 57′.4
	10	22 1.5	195 35.7	359 0.0	332 43.2
	20	22 1.3	195 2.0	359 2.1	104 29.1
	30	22 1.1	194 28.3	359 4.2	236 14.9
Feb.	9	22 0.8	193 54.6	359 6.4	8 0.7
	19	22 0.6	193 20.8	359 8.5	139 46.6
Mar.	1	22 0.5	192 47.1	359 10.6	271 32.4
	11	22 0.3	192 13.4	359 12.7	43 18.2
	21	22 0.1	191 39.7	359 14.9	175 4.1
	31	22 0.0	191 5.9	359 17.1	306 50.0
Apr.	10	21 59.8	190 32.1	359 19.2	78 35.8
	20	21 59.7	189 58.3	359 21.3	210 21.6
	30	21 59.5	189 24.5	359 23.4	342 7.4
May	10	21 59.3	188 50.7	359 25.6	113 53.2
	20	21 59.2	188 17.0	359 27.8	245 39.1
	30	21 59.1	187 43.3	359 30.0	17 24.9
June	9	21 59.0	187 9.5	359 32.1	149 10.7
	19	21 58.9	186 35.8	359 34.2	280 56.6
	29	21 58.9	186 2.0	359 36.4	52 42.4
July	9	21 58.8	185 28.2	359 38.6	184 28.2
	19	21 58.7	184 54.3	359 40.9	316 14.1
	29	21 58.7	184 20.5	359 43.1	87 59.9
Aug.	8	21 58.6	183 46.7	359 45.3	219 45.8
	18	21 58.6	183 12.8	359 47.5	351 31.6
	28	21 58.5	182 39.1	359 49.6	123 17.4
Sept.	7	21 58.4	182 5.4	359 51.8	255 3.2
	17	21 58.4	181 31.7	359 54.0	26 49.1
	27	21 58.4	180 57.9	359 56.2	158 34.9
Oct.	7	21 58.4	180 24.2	359 58.3	290 20.7
	17	21 58.4	179 50.4	0 0.5	62 6.6
	27	21 58.4	179 16.4	0 2.8	193 52.4
Nov.	6	21 58.5	178 42.6	0 5.0	325 38.2
	16	21 58.5	178 8.9	0 7.2	97 24.1
	26	21 58.5	177 35.2	0 9.4	229 10.0
Dec.	6	21 58.6	177 1.4	0 11.6	0 55.8
	16	21 58.6	176 27.5	0 13.7	132 41.7
	26	21 58.6	175 53.8	0 15.9	264 27.5
	36	21 58.7	175 19.9	0 18.1	36 13.4

Mean Solar Days.	Motion of ☾
0.1	1° 19′.06
0.2	2 38.12
0.3	3 57.18
0.4	5 16.23
0.5	6 35.29
0.6	7 54.35
0.7	9 13.41
0.8	10 32.47
0.9	11 51.53
1.0	13 10.58
2.0	26 21.17
3.0	39 31.75
4.0	52 42.33
5.0	65 52.92
6.0	79 3.50
7.0	92 14.09
8.0	105 24.67
9.0	118 35.25
10.0	131 45.84
Hours.	
1	0 32.94
2	1 5.88
3	1 38.82
4	2 11.76
5	2 44.70
6	3 17.65
7	3 50.59
8	4 23.53
9	4 56.47
10	5 29.41
11	6 2.35
12	6 35.29
13	7 8.23
14	7 41.17
15	8 14.11
16	8 47.06
17	9 20.00
18	9 52.94
19	10 25.88
20	10 58.82
21	11 31.76
22	12 4.70
23	12 37.64

TABLE FOR THE LIBRATION OF THE MOON.

Argument, (☊—λ) or (☊—λ—180°).

☊ − λ	Δλ	$\frac{1}{a}$	*B*		☊ − λ	Δλ	$\frac{1}{a}$	*B*	
0°	0′.0	39	0° 0′.0	180°	46°	0′.6	56	1° 3′.9	134°
1	0.0	39	0 1.6	179	47	0.6	57	1 4.9	133
2	0.0	39	0 3.1	178	48	0.6	58	1 6.0	132
3	0.1	39	0 4.7	177	49	0.6	59	1 7.0	131
4	0.1	39	0 6.2	176	50	0.6	60	1 8.0	130
5	0.1	39	0 7.7	175	51	0.6	62	1 9.0	129
6	0.2	39	0 9.3	174	52	0.6	63	1 10.0	128
7	0.2	39	0 10.8	173	53	0.5	64	1 10.9	127
8	0.2	39	0 12.4	172	54	0.5	66	1 11.8	126
9	0.2	39	0 13.9	171	55	0.5	67	1 12.7	125
10	0.2	39	0 15.4	170	56	0.5	69	1 13.6	124
11	0.3	39	0 16.9	169	57	0.5	71	1 14.5	123
12	0.3	40	0 18.5	168	58	0.5	73	1 15.3	122
13	0.3	40	0 20.0	167	59	0.5	75	1 16.1	121
14	0.3	40	0 21.5	166	60	0.5	77	1 16.9	120
15	0.3	40	0 23.0	165	61	0.5	80	1 17.6	119
16	0.3	40	0 24.5	164	62	0.5	83	1 18.4	118
17	0.3	40	0 26.0	163	63	0.5	86	1 19.1	117
18	0.3	41	0 27.4	162	64	0.5	89	1 19.8	116
19	0.4	41	0 28.9	161	65	0.4	92	1 20.4	115
20	0.4	41	0 30.4	160	66	0.4	95	1 21.1	114
21	0.4	41	0 31.8	159	67	0.4	99	1 21.7	113
22	0.4	42	0 33.2	158	68	0.4	103	1 22.3	112
23	0.4	42	0 34.7	157	69	0.4	108	1 22.9	111
24	0.4	42	0 36.1	156	70	0.4	113	1 23.4	110
25	0.4	43	0 37.5	155	71	0.4	119	1 23.9	109
26	0.5	43	0 38.9	154	72	0.4	125	1 24.4	108
27	0.5	43	0 40.3	153	73	0.4	132	1 24.9	107
28	0.5	44	0 41.7	152	74	0.3	141	1 25.3	106
29	0.5	44	0 43.1	151	75	0.3	150	1 25.7	105
30	0.5	45	0 44.4	150	76	0.3	160	1 26.1	104
31	0.5	45	0 45.7	149	77	0.3	172	1 26.5	103
32	0.5	46	0 47.0	148	78	0.2	186	1 26.8	102
33	0.5	46	0 48.4	147	79	0.2	202	1 27.1	101
34	0.5	47	0 49.7	146	80	0.2	222	1 27.4	100
35	0.5	47	0 51.0	145	81	0.2	247	1 27.7	99
36	0.5	48	0 52.2	144	82	0.2	278	1 27.9	98
37	0.5	48	0 53.4	143	83	0.1	318	1 28.1	97
38	0.6	49	0 54.7	142	84	0.1	370	1 28.3	96
39	0.6	50	0 55.9	141	85	0.1	440	1 28.5	95
40	0.6	50	0 57.1	140	86	0.1	555	1 28.6	94
41	0.6	51	0 58.3	139	87	0.1	740	1 28.7	93
42	0.6	52	0 59.4	138	88	0.0	1110	1 28.7	92
43	0.6	53	1 0.6	137	89	0.0	2220	1 28.8	91
44	0.6	54	1 1.7	136	90	0.0	∞	1 28.8	90
45	0.6	55	1 2.8	135					
	Δλ	$\frac{1}{a}$	*B*	☊ − λ		Δλ	$\frac{1}{a}$	*B*	☊ − λ

Δλ has the sign of tan (λ — ☊)
a has the sign of cos (☊ — λ)
B has the sign of sin (☊ — λ)

FOR GREENWICH MEAN NOON.

Date.	Apparent Obliquity of the Ecliptic. (Hansen.)	Equation of Equinoxes		Precession of Equinoxes in Longitude.	The Sun's		Mean Longitude of Moon's Ascending Node.
		In Longitude.	In R. A.		Aberration.	Hor. Par.	
	° ′ ″	″	s	″	″	″	° ′
Jan. 0	23 27 19.19	− 3.99	− 0.244	0.00	− 20.80	9.00	15 12.2
10	19.29	3.46	0.212	1.38	20.79	9.00	14 40.4
20	19.44	3.03	0.185	2.75	20.77	8.99	14 8.6
30	19.63	2.74	0.167	4.13	20.74	8.98	13 36.9
Feb. 9	19.83	2.59	0.158	5.50	20.71	8.96	13 5.1
19	23 27 20.02	− 2.61	− 0.160	6.88	− 20.67	8.94	12 33.3
Mar. 1	20.16	2.74	0.167	8.26	20.63	8.92	12 1.5
11	20.27	2.97	0.182	9.63	20.57	8.90	11 29.8
21	20.29	3.24	0.198	11.01	20.51	8.87	10 58.0
31	20.25	3.51	0.215	12.38	20.45	8.85	10 26.2
Apr. 10	23 27 20.14	− 3.72	− 0.227	13.76	− 20.39	8.82	9 54.4
20	20.01	3.82	0.233	15.14	20.34	8.80	9 22.7
30	19.84	3.81	0.233	16.51	20.29	8.78	8 50.9
May 10	19.65	3.65	0.223	17.89	20.24	8.76	8 19.1
20	19.48	3.37	0.206	19.26	20.19	8.74	7 47.4
30	23 27 19.34	− 2.95	− 0.180	20.64	− 20.16	8.72	7 15.6
June 9	19.24	2.45	0.150	22.02	20.13	8.71	6 43.8
19	19.19	1.89	0.116	23.39	20.11	8.71	6 12.0
29	19.21	1.33	0.081	24.77	20.11	8.70	5 40.3
July 9	19.29	0.80	0.049	26.14	20.10	8.70	5 8.5
19	23 27 19.41	− 0.35	− 0.021	27.52	− 20.12	8.71	4 36.7
29	19.54	− 0.02	− 0.001	28.90	20.14	8.72	4 4.9
Aug. 8	19.71	+ 0.20	+ 0.012	30.27	20.17	8.73	3 33.2
18	19.89	0.28	0.017	31.65	20.20	8.75	3 1.4
28	20.04	0.22	0.013	33.02	20.24	8.77	2 29.6
Sept. 7	23 27 20.14	+ 0.05	+ 0.003	34.40	− 20.29	8.79	1 57.8
17	20.20	− 0.18	− 0.011	35.78	20.35	8.81	1 26.1
27	20.19	0.44	0.027	37.15	20.41	8.83	0 54.3
Oct. 7	20.12	0.69	0.042	38.53	20.47	8.86	0 22.5
17	19.99	0.88	0.054	39.90	20.53	8.88	359 50.8
27	23 27 19.81	− 0.96	− 0.059	41.28	− 20.59	8.91	359 19.0
Nov. 6	19.62	0.88	0.054	42.66	20.64	8.93	358 47.2
16	19.42	0.65	0.040	44.03	20.69	8.95	358 15.4
26	19.23	− 0.29	− 0.018	45.41	20.73	8.97	357 43.7
Dec. 6	19.10	+ 0.19	+ 0.012	46.78	20.76	8.98	357 11.9
16	23 27 19.02	+ 0.74	+ 0.045	48.16	− 20.78	8.99	356 40.1
26	18.99	1.35	0.083	49.54	20.79	9.00	356 8.3
36	23 27 19.03	+ 1.97	+ 0.120	50.91	− 20.79	9.00	355 36.6

Mean Obliquity, 1894.0, 23° 27′ 10″.83 (Hansen).
Mean Obliquity, 1894.0, 23° 27′ 10″.54 (Peters).
Precession for 1894 . . . . 50″.2624 log = 1.70124
Precession in a Solar Day . . . . . . 0″.1377 log = 9.13893
Precession in a Sidereal Day . . . . . 0″.1373 log = 9.13776
Sun's Mean Equatorial Horizontal Parallax . 8″.848 log = 0.94685

Daily Motion of ☊
—3′.177

PART II

ASTRONOMICAL EPHEMERIS

FOR THE

MERIDIAN OF WASHINGTON

FORMULÆ FOR THE REDUCTION OF THE POSITIONS OF THE FIXED STARS, USING THE NOTATION OF BESSEL, AND THE CONSTANTS OF PETERS AND STRUVE.

NOTATION.

τ, the time, reckoned in units of one year, from the beginning of the Besselian fictitious year, (1893, December $30^{d}.649$ = 1894, January $0^{d}.0$—$0^{d}.351$, Washington mean time),
α_0, δ_0, the star's mean right ascension and declination at the beginning of the fictitious year,
α, δ, the star's apparent right ascension and declination at the time τ,
μ, μ', the annual proper motion in right ascension and declination,
$\odot$, the sun's true longitude,
Ω, the longitude of the moon's ascending node,
ω, the obliquity of the ecliptic,
Γ, the longitude of the sun's perigee,
Γ', the longitude of the moon's perigee,
$☾$, the moon's mean longitude.

BESSELIAN STAR-NUMBERS.

$$\begin{aligned}
A = \tau & - 0.34249 \sin \Omega & & - 0.00011 \sin (3 \odot - \Gamma) \\
& + 0.00410 \sin 2 \Omega & & - 0.00005 \sin 2 (\odot - \Omega) \\
& - 0.02521 \sin 2 \odot & & + 0.00010 \sin 2 (\odot - \Gamma') \\
& + 0.00293 \sin (\odot + 82^\circ\, 4') & & + 0.00009 \sin (2 \Gamma' - \Omega) \\
& + 0.00025 \sin (2 \odot - \Omega) & & + 0.00005 \cos \Gamma' \\
& - 0.00405 \sin 2 \text{☾} & & + 0.00004 \sin 2 \Gamma' \\
& + 0.00135 \sin (\text{☾} - \Gamma') & &
\end{aligned}$$

$$\begin{aligned}
B = & - 9''.2239 \cos \Omega & & - 0''.0027 \cos (3 \odot - \Gamma) \\
& + 0.0895 \cos 2 \Omega & & + 0.0067 \cos (2 \odot - \Omega) \\
& - 0.5506 \cos 2 \odot & & + 0.0024 \cos (2 \Gamma' - \Omega) \\
& - 0.0092 \cos (\odot + 281^\circ\, 3') & & - 0.0023 \sin \Gamma' \\
& - 0.0886 \cos 2 \text{☾} & & + 0.0008 \cos 2 \Gamma'
\end{aligned}$$

$$\begin{aligned}
C &= - 20''.4451 \cos \omega \cos \odot \\
D &= - 20.4451 \sin \odot \\
E &= - \ 0.0461 \sin \Omega + 0''.0014 \sin 2 \Omega - 0''.0033 \sin 2 \odot
\end{aligned}$$

BESSEL'S *Star-Constants.*

$$\begin{aligned}
a &= 3^{s}.07261 + 1^{s}.33684 \sin \alpha_0 \tan \delta_0 = \text{precession in right ascension} \\
b &= \tfrac{1}{15} \cos \alpha_0 \tan \delta_0 \\
c &= \tfrac{1}{15} \cos \alpha_0 \sec \delta_0 \\
d &= \tfrac{1}{15} \sin \alpha_0 \sec \delta_0 \\
a' &= 20''.0526 \cos \alpha_0 = \text{precession in declination} \\
b' &= - \sin \alpha_0 \\
c' &= \tan \omega \cos \delta_0 - \sin \alpha_0 \sin \delta_0 \\
d' &= \cos \alpha_0 \sin \delta_0
\end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned}
\alpha &= \alpha_0 + \tau \mu + A a + B b + C c + D d + \tfrac{1}{15} E & & \text{(in time)} \\
\delta &= \delta_0 + \tau \mu' + A a' + B b' + C c' + D d' & & \text{(in arc)}
\end{aligned}$$

INDEPENDENT STAR-NUMBERS.

$$f = 46''.0891\, A + E \ \text{(in arc)} = 3^{s}.07261\, A + \tfrac{1}{15} E \ \text{(in time)}$$

$$\begin{aligned}
g \sin G &= B & h \sin H &= C & & \\
g \cos G &= 20''.0526\, A & h \cos H &= D & i &= C \tan \omega
\end{aligned}$$

Reduction to Apparent Position.

$$\begin{aligned}
\alpha &= \alpha_0 + f + \tau \mu + \tfrac{1}{15} g \sin (G + \alpha_0) \tan \delta_0 + \tfrac{1}{15} h \sin (H + \alpha_0) \sec \delta_0 & & \text{(in time)} \\
\delta &= \delta_0 + \tau \mu' + g \cos (G + \alpha_0) + h \cos (H + \alpha_0) \sin \delta_0 + i \cos \delta_0 & & \text{(in arc)}
\end{aligned}$$

NOTES.—(1) The independent star-numbers are more convenient, when only one or two apparent positions of a star are required, or when BESSEL'S star-constants are not known with sufficient accuracy. Otherwise, the Besselian star-numbers are more convenient.

(2) In using the star-constants of the *British Association Catalogue*, a, b, c, d, a', b', c', d', must be changed to c, d, a, b, $-c'$, $-d'$, $-a'$, $-b'$, respectively.

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*	Solar Day. (Sid. Hour.)	Log *A.*	Log *B.*	Log *C.*	Log *D.*
Jan. 0	−8.8929	−0.9216	−0.5473	+1.3028	Feb. 15	+8.9060	−0.9571	−1.1993	+1.0401
1	8.8746	0.9200	0.5858	1.3013	16	8.9303	0.9590	1.2041	1.0279
2	8.8509	0.9185	0.6211	1.2996	17	8.9506	0.9613	1.2087	1.0151
3	8.8210	0.9174	0.6536	1.2978	18	8.9662	0.9641	1.2131	1.0018
($7^{h}.0$) 4	8.7853	0.9170	0.6887	1.2958	($10^{h}.0$) 19	8.9770	0.9668	1.2174	0.9879
5	−8.7450	−0.9176	−0.7117	+1.2936	20	+8.9838	−0.9691	−1.2215	+0.9735
6	8.7021	0.9194	0.7378	1.2913	21	8.9880	0.9706	1.2254	0.9585
7	8.6598	0.9216	0.7624	1.2888	22	8.9912	0.9712	1.2291	0.9428
8	8.6203	0.9244	0.7856	1.2862	23	8.9949	0.9711	1.2326	0.9263
9	8.5866	0.9271	0.8074	1.2835	24	9.0008	0.9702	1.2359	0.9091
10	−8.5586	−0.9295	−0.8280	+1.2807	25	+9.0095	−0.9691	−1.2391	+0.8909
11	8.5343	0.9310	0.8476	1.2777	26	9.0213	0.9680	1.2421	0.8720
12	8.5100	0.9317	0.8661	1.2745	27	9.0355	0.9674	1.2450	0.8521
13	8.4796	0.9316	0.8838	1.2711	28	9.0507	0.9675	1.2478	0.8310
14	8.4373	0.9307	0.9007	1.2675	Mar. 1	9.0654	0.9684	1.2504	0.8088
15	−8.3755	−0.9295	−0.9169	+1.2638	2	+9.0785	−0.9702	−1.2529	+0.7852
16	8.2851	0.9285	0.9324	1.2600	3	9.0890	0.9723	1.2552	0.7601
17	8.1483	0.9280	0.9473	1.2559	4	9.0966	0.9748	1.2573	0.7333
18	7.9258	0.9283	0.9616	1.2517	5	9.1012	0.9770	1.2593	0.7046
19	−7.4425	0.9295	0.9752	1.2473	($11^{h}.0$) 6	9.1036	0.9786	1.2611	0.6739
($8^{h}.0$) 20	+7.4099	−0.9318	−0.9882	+1.2427	7	+9.1048	−0.9795	−1.2628	+0.6406
21	7.8591	0.9345	1.0008	1.2379	8	9.1064	0.9795	1.2644	0.6046
22	8.0418	0.9375	1.0129	1.2329	9	9.1095	0.9787	1.2659	0.5651
23	8.1411	0.9404	1.0244	1.2278	10	9.1148	0.9775	1.2673	0.5216
24	8.2025	0.9426	1.0354	1.2225	11	9.1231	0.9760	1.2685	0.4730
25	+8.2445	−0.9442	−1.0459	+1.2170	12	+9.1338	−0.9747	−1.2695	+0.4181
26	8.2808	0.9448	1.0560	1.2112	13	9.1464	0.9739	1.2704	0.3552
27	8.3197	0.9445	1.0658	1.2052	14	9.1597	0.9739	1.2712	0.2815
28	8.3659	0.9438	1.0753	1.1990	15	9.1727	0.9746	1.2719	0.1927
29	8.4203	0.9428	1.0845	1.1926	16	9.1832	0.9761	1.2724	0.0807
30	+8.4791	−0.9421	−1.0933	+1.1859	17	+9.1916	−0.9780	−1.2728	+9.9296
31	8.5386	0.9420	1.1018	1.1790	18	9.1979	0.9800	1.2730	9.6954
Feb. 1	8.5937	0.9428	1.1100	1.1719	19	9.2016	0.9817	1.2731	+9.1487
2	8.6415	0.9444	1.1180	1.1645	20	9.2035	0.9827	1.2731	−9.3267
3	8.6805	0.9469	1.1257	1.1568	($12^{h}.0$) 21	9.2047	0.9828	1.2730	9.7530
($9^{h}.0$) 4	+8.7104	−0.9497	−1.1332	+1.1489	22	+9.2058	−0.9821	−1.2728	−9.9630
5	8.7320	0.9527	1.1404	1.1407	23	9.2082	0.9808	1.2724	0.1047
6	8.7465	0.9554	1.1473	1.1322	24	9.2124	0.9789	1.2718	0.2108
7	8.7562	0.9574	1.1540	1.1234	25	9.2186	0.9771	1.2711	0.2949
8	8.7641	0.9586	1.1604	1.1142	26	9.2265	0.9755	1.2703	0.3668
9	+8.7731	−0.9589	−1.1666	+1.1047	27	+9.2356	−0.9746	−1.2694	−0.4278
10	8.7855	0.9585	1.1726	1.0948	28	9.2448	0.9744	1.2684	0.4809
11	8.8030	0.9576	1.1784	1.0845	29	9.2537	0.9752	1.2672	0.5281
12	8.8254	0.9567	1.1840	1.0739	30	9.2610	0.9763	1.2659	0.5706
13	8.8514	0.9561	1.1893	1.0630	31	9.2665	0.9778	1.2644	0.6092
14	+8.8789	−0.9562	−1.1944	+1.0518	Apr. 1	+9.2702	−0.9793	−1.2628	−0.6446
15	+8.9060	−0.9571	−1.1993	+1.0401	2	+9.2721	−0.9804	−1.2611	−0.6770

E = — 0″.01

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
Apr. 1	+9.2702	−0.9793	−1.2628	−0.6446	May 17	+9.4882	−0.9474	−1.0068	−1.2353
2	9.2721	0.9804	1.2611	0.6770	18	9.4925	0.9446	0.9953	1.2399
3	9.2732	0.9807	1.2592	0.7070	19	9.4978	0.9420	0.9833	1.2443
4	9.2740	0.9802	1.2572	0.7350	20	9.5040	0.9399	0.9709	1.2485
5	9.2758	0.9789	1.2551	0.7612	$(16^{\mathrm{h}}.0)$ 21	9.5107	0.9386	0.9580	1.2526
$(13^{\mathrm{h}}.0)$ 6	+9.2789	−0.9769	−1.2528	−0.7857	22	+9.5174	−0.9382	−0.9446	−1.2565
7	9.2841	0.9747	1.2504	0.8089	23	9.5235	0.9387	0.9306	1.2603
8	9.2913	0.9725	1.2479	0.8307	24	9.5288	0.9398	0.9160	1.2640
9	9.3000	0.9707	1.2453	0.8513	25	9.5330	0.9412	0.9007	1.2675
10	9.3096	0.9696	1.2425	0.8708	26	9.5362	0.9424	0.8847	1.2709
11	+9.3191	−0.9694	−1.2395	−0.8894	27	+9.5386	−0.9430	−0.8681	−1.2741
12	9.3279	0.9701	1.2364	0.9071	28	9.5407	0.9428	0.8507	1.2771
13	9.3352	0.9710	1.2331	0.9240	29	9.5429	0.9417	0.8325	1.2800
14	9.3406	0.9722	1.2297	0.9401	30	9.5458	0.9399	0.8133	1.2827
15	9.3445	0.9734	1.2261	0.9556	31	9.5494	0.9375	0.7931	1.2853
16	+9.3469	−0.9739	−1.2223	−0.9703	June 1	+9.5542	−0.9349	−0.7719	−1.2878
17	9.3485	0.9737	1.2184	0.9844	2	9.5600	0.9327	0.7494	1.2902
18	9.3500	0.9726	1.2144	0.9979	3	9.5665	0.9310	0.7255	1.2924
19	9.3523	0.9707	1.2102	1.0109	4	9.5733	0.9303	0.7002	1.2945
20	9.3557	0.9683	1.2059	1.0234	$(17^{\mathrm{h}}.0)$ 5	9.5799	0.9305	0.6732	1.2964
$(14^{\mathrm{h}}.0)$ 21	+9.3606	−0.9657	−1.2014	−1.0356	6	+9.5860	−0.9316	−0.6443	−1.2982
22	9.3669	0.9633	1.1967	1.0473	7	9.5912	0.9332	0.6132	1.2999
23	9.3742	0.9615	1.1918	1.0585	8	9.5954	0.9349	0.5796	1.3015
24	9.3819	0.9604	1.1867	1.0691	9	9.5987	0.9363	0.5430	1.3029
25	9.3893	0.9602	1.1815	1.0792	10	9.6012	0.9370	0.5029	1.3042
26	+9.3960	−0.9608	−1.1761	−1.0891	11	+9.6035	−0.9369	−0.4586	−1.3054
27	9.4014	0.9618	1.1705	1.0967	12	9.6058	0.9359	0.4091	1.3065
28	9.4054	0.9629	1.1647	1.1080	13	9.6085	0.9341	0.3532	1.3075
29	9.4082	0.9637	1.1586	1.1170	14	9.6120	0.9320	0.2889	1.3083
30	9.4101	0.9639	1.1523	1.1257	15	9.6163	0.9298	0.2132	1.3090
May 1	+9.4118	−0.9632	−1.1458	−1.1341	16	+9.6212	−0.9281	−0.1213	−1.3096
2	9.4138	0.9616	1.1391	1.1422	17	9.6266	0.9272	0.0046	1.3100
3	9.4168	0.9594	1.1322	1.1500	18	9.6321	0.9272	9.8441	1.3103
4	9.4212	0.9567	1.1251	1.1576	19	9.6374	0.9282	9.5865	1.3105
5	9.4271	0.9539	1.1178	1.1648	20	9.6420	0.9298	−8.8714	1.3105
$(15^{\mathrm{h}}.0)$ 6	+9.4341	−0.9516	−1.1102	−1.1718	$(18^{\mathrm{h}}.0)$ 21	+9.6458	−0.9321	+9.3767	−1.3104
7	9.4420	0.9499	1.1023	1.1786	22	9.6488	0.9340	9.7404	1.3102
8	9.4502	0.9491	1.0941	1.1852	23	9.6511	0.9355	9.9359	1.3100
9	9.4580	0.9493	1.0857	1.1916	24	9.6529	0.9364	0.0696	1.3097
10	9.4648	0.9499	1.0770	1.1978	25	9.6548	0.9363	0.1718	1.3093
11	+9.4704	−0.9510	−1.0680	−1.2038	26	+9.6569	−0.9355	+0.2543	−1.3087
12	9.4748	0.9520	1.0587	1.2096	27	9.6597	0.9340	0.3236	1.3079
13	9.4779	0.9527	1.0490	1.2151	28	9.6632	0.9322	0.3832	1.3070
14	9.4803	0.9526	1.0390	1.2204	39	9.6676	0.9306	0.4355	1.3059
15	9.4825	0.9516	1.0287	1.2255	30	9.6726	0.9295	0.4820	1.3047
16	+9.4849	−0.9498	−1.0180	−1.2305	July 1	+9.6779	−0.9293	+0.5239	−1.3034
17	+9.4882	−0.9474	−1.0068	−1.2353	2	+9.6833	−0.9300	+0.5621	−1.3020

E = − 0″.01

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.	Solar Day. (Sid. Hour.)	Log *A*.	Log *B*.	Log *C*.	Log *D*.
July 1	+9.6779	−0.9293	+0.5239	−1.3034	Aug. 16	+9.8011	−0.9711	+1.1825	−1.0772
2	9.6833	0.9300	0.5621	1.3020	17	9.8018	0.9730	1.1877	1.0669
3	9.6882	0.9316	0.5970	1.3006	18	9.8023	0.9742	1.1927	1.0562
4	9.6926	0.9340	0.6291	1.2991	19	9.8029	0.9745	1.1975	1.0451
5	9.6961	0.9364	0.6589	1.2975	(22^{h}.0) 20	9.8037	0.9741	1.2021	1.0336
(19^{h}.0) 6	+9.6989	−0.9387	+0.6867	−1.2957	21	+9.8051	−0.9732	+1.2065	−1.0216
7	9.7010	0.9405	0.7128	1.2937	22	9.8070	0.9720	1.2108	1.0091
8	9.7028	0.9414	0.7373	1.2915	23	9.8095	0.9712	1.2149	0.9962
9	9.7045	0.9414	0.7603	1.2891	24	9.8124	0.9709	1.2188	0.9828
10	9.7065	0.9407	0.7821	1.2866	25	9.8155	0.9714	1.2226	0.9688
11	+9.7089	−0.9394	+0.8027	−1.2840	26	+9.8185	−0.9727	+1.2263	−0.9541
12	9.7120	0.9381	0.8223	1.2813	27	9.8212	0.9747	1.2299	0.9388
13	9.7156	0.9370	0.8410	1.2785	28	9.8233	0.9771	1.2333	0.9229
14	9.7197	0.9365	0.8587	1.2757	29	9.8249	0.9796	1.2365	0.9062
15	9.7239	0.9370	0.8756	1.2727	30	9.8260	0.9817	1.2396	0.8887
16	+9.7280	−0.9383	+0.8918	−1.2695	31	+9.8266	−0.9832	+1.2425	−0.8703
17	9.7317	0.9405	0.9073	1.2661	Sept. 1	9.8271	0.9838	1.2453	0.8509
18	9.7347	0.9431	0.9222	1.2625	2	9.8276	0.9836	1.2479	0.8305
19	9.7371	0.9459	0.9364	1.2588	3	9.8283	0.9828	1.2504	0.8090
20	9.7388	0.9483	0.9501	1.2550	4	9.8295	0.9815	1.2528	0.7862
(20^{h}.0) 21	+9.7401	−0.9500	+0.9632	−1.2510	(23^{h}.0) 5	+9.8312	−0.9801	+1.2550	−0.7620
22	9.7413	0.9509	0.9758	1.2468	6	9.8333	0.9792	1.2571	0.7362
23	9.7425	0.9509	0.9880	1.2425	7	9.8357	0.9788	1.2591	0.7087
24	9.7443	0.9503	0.9997	1.2380	8	9.8381	0.9793	1.2610	0.6791
25	9.7466	0.9492	1.0110	1.2334	9	9.8404	0.9806	1.2628	0.6473
26	+9.7496	−0.9482	+1.0219	−1.2286	10	+9.8422	−0.9824	+1.2644	−0.6127
27	9.7532	0.9474	1.0324	1.2236	11	9.8436	0.9846	1.2658	0.5750
28	9.7572	0.9475	1.0426	1.2184	12	9.8445	0.9866	1.2670	0.5335
29	9.7612	0.9484	1.0524	1.2130	13	9.8449	0.9881	1.2681	0.4875
30	9.7651	0.9504	1.0619	1.2074	14	9.8451	0.9890	1.2691	0.4357
31	+9.7685	−0.9527	+1.0711	−1.2016	15	+9.8453	−0.9890	+1.2700	−0.3769
Aug. 1	9.7713	0.9555	1.0800	1.1956	16	9.8456	0.9882	1.2708	0.3087
2	9.7734	0.9583	1.0885	1.1895	17	9.8464	0.9868	1.2716	0.2275
3	9.7749	0.9606	1.0967	1.1832	18	9.8477	0.9651	1.2722	0.1279
4	9.7760	0.9621	1.1046	1.1767	19	9.8496	0.9835	1.2726	9.9966
(21^{h}.0) 5	+9.7770	−0.9628	+1.1123	−1.1699	(0^{h}.0) 20	+9.8519	−0.9823	+1.2729	−9.8084
6	9.7781	0.9627	1.1198	1.1628	21	9.8544	0.9819	1.2731	−9.4705
7	9.7796	0.9619	1.1271	1.1554	22	9.8570	0.9823	1.2731	+8.7252
8	9.7816	0.9609	1.1341	1.1479	23	9.8593	0.9834	1.2730	9.6068
9	9.7840	0.9600	1.1409	1.1401	24	9.8613	0.9850	1.2728	9.8776
10	+9.7869	−0.9596	+1.1475	−1.1320	25	+9.8628	−0.9867	+1.2725	+0.0433
11	9.7900	0.9600	1.1539	1.1236	26	9.8638	0.9882	1.2720	0.1623
12	9.7931	0.9612	1.1600	1.1149	27	9.8644	0.9892	1.2714	0.2560
13	9.7959	0.9632	1.1659	1.1060	28	9.8647	0.9894	1.2707	0.3328
14	9.7982	0.9658	1.1716	1.0968	29	9.8650	0.9887	1.2698	0.3981
15	+9.7999	−0.9685	+1.1771	−1.0872	30	+9.8656	−0.9873	+1.2688	+0.4547
16	+9.8011	−0.9711	+1.1825	−1.0772	Oct. 1	+9.8664	−0.9853	+1.2677	+0.5047

E = 0″.00

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.	Solar Day. (Sid. Hour.)	Log A.	Log B.	Log C.	Log D.
Oct. 1	+9.8664	−0.9853	+1.2677	+0.5047	Nov. 16	+9.9370	−0.9475	+1.0329	+1.2233
2	9.8678	0.9832	1.2665	0.5495	17	9.9394	0.9480	1.0218	1.2286
3	9.8696	0.9814	1.2652	0.5899	18	9.9416	0.9490	1.0103	1.2337
4	9.8717	0.9800	1.2638	0.6268	19	9.9433	0.9501	0.9983	1.2386
($1^{h}.0$) 5	9.8739	0.9795	1.2621	0.6607	($4^{h}.0$) 20	9.9446	0.9508	0.9859	1.2433
6	+9.8761	−0.9797	+1.2602	+0.6920	21	+9.9456	−0.9509	+0.9730	+1.2478
7	9.8780	0.9806	1.2582	0.7211	22	9.9466	0.9501	0.9595	1.2522
8	9.8794	0.9819	1.2561	0.7484	23	9.9476	0.9485	0.9454	1.2564
9	9.8804	0.9832	1.2539	0.7739	24	9.9488	0.9462	0.9306	1.2604
10	9.8810	0.9842	1.2516	0.7978	25	9.9504	0.9434	0.9151	1.2642
11	+9.8813	−0.9846	+1.2491	+0.8204	26	+9.9523	−0.9407	+0.8991	+1.2678
12	9.8815	0.9841	1.2465	0.8418	27	9.9546	0.9384	0.8824	1.2713
13	9.8818	0.9827	1.2437	0.8620	28	9.9571	0.9369	0.8647	1.2746
14	9.8825	0.9807	1.2408	0.8813	29	9.9596	0.9363	0.8461	1.2778
15	9.8837	0.9783	1.2377	0.8996	30	9.9621	0.9366	0.8266	1.2808
16	+9.8854	−0.9759	+1.2344	+0.9170	Dec. 1	+9.9642	−0.9376	+0.8059	+1.2837
17	9.8875	0.9738	1.2310	0.9337	2	9.9660	0.9389	0.7842	1.2865
18	9.8900	0.9724	1.2275	0.9497	3	9.9673	0.9402	0.7610	1.2891
19	9.8926	0.9717	1.2238	0.9650	4	9.9684	0.9411	0.7364	1.2915
($2^{h}.0$) 20	9.8951	0.9719	1.2199	0.9796	($5^{h}.0$) 5	9.9692	0.9412	0.7102	1.2937
21	+9.8973	−0.9727	+1.2158	+0.9935	6	+9.9701	−0.9404	+0.6823	+1.2958
22	9.8990	0.9738	1.2116	1.0067	7	9.9712	0.9388	0.6521	1.2977
23	9.9003	0.9748	1.2072	1.0195	8	9.9725	0.9366	0.6196	1.2995
24	9.9012	0.9753	1.2026	1.0319	9	9.9743	0.9342	0.5843	1.3012
25	9.9018	0.9751	1.1978	1.0439	10	9.9764	0.9319	0.5458	1.3028
26	+9.9024	−0.9741	+1.1928	+1.0556	11	+9.9790	−0.9302	+0.5032	+1.3042
27	9.9031	0.9723	1.1876	1.0669	12	9.9817	0.9293	0.4559	1.3054
28	9.9041	0.9699	1.1822	1.0777	13	9.9844	0.9294	0.4026	1.3065
29	9.9055	0.9672	1.1766	1.0881	14	9.9869	0.9304	0.3418	1.3075
30	9.9074	0.9645	1.1708	1.0981	15	9.9892	0.9320	0.2708	1.3084
31	+9.9096	−0.9623	+1.1648	+1.1077	16	+9.9911	−0.9339	+0.1862	+1.3090
Nov. 1	9.9120	0.9608	1.1586	1.1168	17	9.9926	0.9355	0.0800	1.3098
2	9.9143	0.9602	1.1522	1.1256	18	9.9938	0.9366	9.9390	1.3102
3	9.9165	0.9604	1.1455	1.1342	19	9.9949	0.9369	9.7293	1.3105
4	9.9183	0.9611	1.1386	1.1426	($6^{h}.0$) 20	9.9959	0.9362	+9.3060	1.3106
($3^{h}.0$) 5	+9.9197	−0.9621	+1.1314	+1.1507	21	+9.9971	−0.9348	−9.1091	+1.3106
6	9.9208	0.9629	1.1240	1.1586	22	9.9986	0.9329	9.6654	1.3105
7	9.9215	0.9632	1.1163	1.1662	23	0.0004	0.9309	9.9011	1.3102
8	9.9220	0.9627	1.1083	1.1735	24	0.0025	0.9292	0.0528	1.3098
9	9.9227	0.9611	1.1000	1.1805	25	0.0048	0.9282	0.1650	1.3093
10	+9.9236	−0.9590	+1.0914	+1.1873	26	+0.0072	−0.9282	−0.2540	+1.3086
11	9.9249	0.9563	1.0826	1.1938	27	0.0095	0.9291	0.3277	1.3078
12	9.9267	0.9534	1.0734	1.2001	28	0.0116	0.9308	0.3906	1.3069
13	9.9290	0.9508	1.0638	1.2062	29	0.0133	0.9331	0.4453	1.3058
14	9.9315	0.9489	1.0539	1.2121	30	0.0147	0.9353	0.4939	1.3045
15	+9.9343	−0.9477	+1.0436	+1.2178	31	+0.0158	−0.9373	−0.5373	+1.3031
16	+9.9370	−0.9475	+1.0329	+1.2233	32	+0.0167	−0.9386	−0.5768	+1.3016

E = 0″.00

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
Jan. 0	0.0023	−3.61	−0.241	259 22	17 17.5	350 3	23 20.2	+0.9291	+1.3093	−1.53	−0.1844
1	0.0050	3.46	0.231	259 46	17 19.1	349 7	23 16.5	0.9270	1.3091	1.67	0.2231
2	0.0078	3.28	0.219	260 16	17 21.1	348 10	23 12.7	0.9248	1.3089	1.81	0.2584
3	0.0105	3.06	0.204	260 53	17 23.5	347 13	23 8.9	0.9229	1.3086	1.95	0.2908
h (7.0) 4	0.0133	2.82	0.188	261 35	17 26.3	346 16	23 5.1	0.9217	1.3083	2.09	0.3209
5	0.0160	−2.57	−0.171	262 20	17 29.3	345 19	23 1.3	+0.9215	+1.3080	−2.23	−0.3489
6	0.0187	2.33	0.155	263 4	17 32.3	344 23	22 57.5	0.9226	1.3077	2.37	0.3753
7	0.0215	2.11	0.141	263 44	17 34.9	343 26	22 53.7	0.9242	1.3073	2.51	0.3998
8	0.0242	1.93	0.129	264 19	17 37.3	342 29	22 49.9	0.9265	1.3069	2.65	0.4230
9	0.0270	1.79	0.119	264 46	17 39.1	341 32	22 46.1	0.9289	1.3065	2.79	0.4448
10	0.0297	−1.68	−0.112	265 7	17 40.4	340 35	22 42.3	+0.9311	+1.3061	−2.92	−0.4653
11	0.0324	1.59	0.106	265 24	17 41.6	339 38	22 38.5	0.9324	1.3057	3.06	0.4850
12	0.0352	1.51	0.101	265 39	17 42.6	338 41	22 34.7	0.9330	1.3052	3.19	0.5036
13	0.0379	1.40	0.093	265 57	17 43.8	337 43	22 30.9	0.9327	1.3047	3.33	0.5214
14	0.0407	1.27	0.085	266 19	17 45.3	336 45	22 27.0	0.9316	1.3042	3.46	0.5383
15	0.0434	−1.10	−0.073	266 48	17 47.2	335 47	22 23.1	+0.9302	+1.3037	−3.59	−0.5544
16	0.0461	0.90	0.060	267 23	17 49.5	334 49	22 19.3	0.9290	1.3032	3.72	0.5697
17	0.0489	0.66	0.044	268 5	17 52.3	333 51	22 15.4	0.9282	1.3027	3.85	0.5843
18	0.0516	0.40	0.027	268 51	17 55.4	332 53	22 11.5	0.9284	1.3022	3.98	0.5984
19	0.0544	−0.14	−0.009	269 37	17 58.5	331 55	22 7.7	0.9295	1.3017	4.10	0.6120
h (8.0) 20	0.0571	+0.11	+0.007	270 20	18 1.3	330 57	22 3.8	+0.9318	+1.3011	−4.22	−0.6251
21	0.0598	0.32	0.021	270 58	18 3.9	329 58	21 59.9	0.9346	1.3005	4.35	0.6377
22	0.0626	0.50	0.033	271 28	18 5.9	328 59	21 55.9	0.9376	1.2999	4.47	0.6498
23	0.0653	0.63	0.042	271 49	18 7.3	328 0	21 52.0	0.9406	1.2993	4.59	0.6614
24	0.0681	0.72	0.048	272 5	18 8.3	327 1	21 48.1	0.9429	1.2987	4.71	0.6725
25	0.0708	+0.80	+0.053	272 18	18 9.2	326 2	21 44.1	+0.9446	+1.2981	−4.82	−0.6830
26	0.0735	0.87	0.058	272 29	18 9.9	325 2	21 40.1	0.9452	1.2975	4.94	0.6930
27	0.0763	0.95	0.063	272 43	18 10.9	324 3	21 36.1	0.9450	1.2968	5.05	0.7028
28	0.0790	1.06	0.071	273 2	18 12.1	323 3	21 32.2	0.9444	1.2962	5.16	0.7124
29	0.0818	1.20	0.080	273 27	18 13.8	322 4	21 28.3	0.9436	1.2955	5.27	0.7218
30	0.0845	+1.38	+0.092	273 57	18 15.8	321 4	21 24.3	+0.9431	+1.2949	−5.38	−0.7308
31	0.0872	1.58	0.105	274 32	18 18.1	320 4	21 20.3	0.9434	1.2943	5.49	0.7395
Feb. 1	0.0900	1.80	0.120	275 8	18 20.5	319 4	21 16.3	0.9446	1.2936	5.60	0.7478
2	0.0927	2.01	0.134	275 42	18 22.8	318 3	21 12.2	0.9466	1.2930	5.70	0.7558
3	0.0955	2.20	0.147	276 12	18 24.8	317 3	21 8.2	0.9495	1.2923	5.80	0.7634
h (9.0) 4	0.0982	+2.36	+0.157	276 36	18 26.4	316 3	21 4.2	+0.9526	+1.2917	−5.90	−0.7707
5	0.1009	2.48	0.165	276 53	18 27.5	315 2	21 0.1	0.9558	1.2910	5.99	0.7778
6	0.1036	2.56	0.171	277 4	18 28.3	314 1	20 56.1	0.9587	1.2904	6.08	0.7847
7	0.1064	2.62	0.175	277 11	18 28.7	313 0	20 52.0	0.9608	1.2897	6.18	0.7914
8	0.1091	2.66	0.177	277 18	18 29.2	311 59	20 47.9	0.9621	1.2891	6.27	0.7979
9	0.1118	+2.72	+0.181	277 27	18 29.8	310 57	20 43.8	+0.9626	+1.2884	−6.37	−0.8041
10	0.1145	2.80	0.187	277 40	18 30.7	309 55	20 39.7	0.9624	1.2877	6.46	0.8100
11	0.1173	2.92	0.195	278 0	18 32.0	308 53	20 35.5	0.9618	1.2871	6.55	0.8157
12	0.1200	3.07	0.205	278 26	18 33.7	307 50	20 31.3	0.9614	1.2864	6.63	0.8212
13	0.1228	3.26	0.217	278 57	18 35.8	306 47	20 27.1	0.9614	1.2858	6.71	0.8266
14	0.1255	+3.47	+0.231	279 33	18 38.2	305 45	20 23.0	+0.9623	+1.2851	−6.79	−0.8318
15	0.1282	+3.70	+0.247	280 6	18 40.4	304 43	20 18.9	+0.9639	+1.2845	−6.87	−0.8368

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Feb.	15	0.1282	+3.70	+0.247	280 6	18 40.4	304 43	20 18.9	+0.9639	+1.2845	−6.87	−0.8368
	16	0.1310	3.92	0.261	280 38	18 42.5	303 41	20 14.7	0.9665	1.2839	6.95	0.8416
	17	0.1337	4.10	0.273	281 4	18 44.3	302 38	20 10.5	0.9695	1.2833	7.02	0.8462
	18	0.1365	4.26	0.284	281 23	18 45.5	301 35	20 6.3	0.9727	1.2827	7.09	0.8506
h (10.0)	19	0.1392	4.36	0.291	281 36	18 46.4	300 32	20 2.1	0.9758	1.2821	7.16	0.8548
	20	0.1419	+4.43	+0.295	281 43	18 46.9	299 29	19 57.9	+0.9782	+1.2815	−7.23	−0.8589
	21	0.1447	4.47	0.298	281 47	18 47.1	298 26	19 53.7	0.9799	1.2810	7.29	0.8628
	22	0.1474	4.51	0.301	281 52	18 47.5	297 23	19 49.5	0.9806	1.2804	7.35	0.8665
	23	0.1502	4.54	0.303	281 58	18 47.9	296 19	19 45.3	0.9806	1.2799	7.41	0.8700
	24	0.1529	4.60	0.307	282 8	18 48.5	295 15	19 41.0	0.9800	1.2794	7.47	0.8734
	25	0.1556	+4.71	+0.314	282 25	18 49.7	294 11	19 36.7	+0.9794	+1.2789	−7.53	−0.8767
	26	0.1584	4.83	0.322	282 46	18 51.1	293 7	19 32.5	0.9789	1.2784	7.58	0.8798
	27	0.1611	4.99	0.333	283 12	18 52.8	292 3	19 28.2	0.9790	1.2780	7.63	0.8827
	28	0.1639	5.17	0.345	283 39	18 54.6	290 59	19 23.9	0.9799	1.2776	7.68	0.8854
Mar.	1	0.1666	5.34	0.356	284 4	18 56.3	289 55	19 19.7	0.9816	1.2772	7.73	0.8880
	2	0.1693	+5.51	+0.367	284 26	18 57.7	288 51	19 15.4	+0.9841	+1.2768	−7.77	−0.8904
	3	0.1721	5.65	0.377	284 42	18 58.8	287 46	19 11.1	0.9868	1.2764	7.81	0.8926
	4	0.1748	5.75	0.383	284 52	18 59.5	286 41	19 6.7	0.9896	1.2760	7.85	0.8947
	5	0.1776	5.82	0.388	284 57	18 59.8	285 36	19 2.4	0.9920	1.2756	7.89	0.8968
h (11.0)	6	0.1803	5.84	0.389	284 58	18 59.9	284 31	18 58.1	0.9936	1.2753	7.92	0.8987
	7	0.1830	+5.86	+0.391	284 59	18 59.9	283 27	18 53.8	+0.9945	+1.2750	−7.95	−0.9004
	8	0.1858	5.88	0.392	285 2	19 0.1	282 22	18 49.5	0.9946	1.2747	7.98	0.9020
	9	0.1885	5.92	0.395	285 10	19 0.7	281 17	18 45.1	0.9941	1.2745	8.01	0.9034
	10	0.1913	5.99	0.399	285 23	19 1.5	280 12	18 40.8	0.9933	1.2742	8.03	0.9047
	11	0.1940	6.11	0.407	285 43	19 2.9	279 7	18 36.5	0.9926	1.2740	8.05	0.9059
	12	0.1967	+6.26	+0.417	286 8	19 4.5	278 2	18 32.1	+0.9922	+1.2738	−8.07	−0.9069
	13	0.1995	6.45	0.430	286 37	19 6.5	276 57	18 27.8	0.9924	1.2736	8.09	0.9078
	14	0.2022	6.65	0.443	287 6	19 8.4	275 52	18 23.5	0.9935	1.2735	8.11	0.9086
	15	0.2050	6.85	0.457	287 34	19 10.3	274 47	18 19.1	0.9953	1.2734	8.12	0.9093
	16	0.2077	7.02	0.468	287 54	19 11.6	273 42	18 14.8	0.9977	1.2733	8.13	0.9098
	17	0.2104	+7.15	+0.477	288 9	19 12.6	272 37	18 10.5	+1.0002	+1.2733	−8.13	−0.9102
	18	0.2132	7.26	0.484	288 19	19 13.3	271 32	18 6.1	1.0026	1.2733	8.13	0.9104
	19	0.2159	7.32	0.488	288 24	19 13.6	270 27	18 1.8	1.0045	1.2732	8.14	0.9105
	20	0.2187	7.35	0.490	288 26	19 13.7	269 22	17 57.5	1.0056	1.2732	8.14	0.9105
h (12.0)	21	0.2214	7.37	0.491	288 29	19 13.9	268 17	17 53.1	1.0058	1.2732	8.14	0.9104
	22	0.2241	+7.39	+0.493	288 33	19 14.2	267 12	17 48.8	+1.0053	+1.2733	−8.13	−0.9102
	23	0.2268	7.43	0.495	288 42	19 14.8	266 7	17 44.5	1.0044	1.2734	8.12	0.9098
	24	0.2296	7.51	0.501	288 57	19 15.8	265 2	17 40.1	1.0031	1.2735	8.11	0.9093
	25	0.2323	7.61	0.507	289 16	19 17.1	263 58	17 35.9	1.0022	1.2736	8.10	0.9086
	26	0.2350	7.75	0.517	289 40	19 18.7	262 54	17 31.6	1.0016	1.2737	8.09	0.9078
	27	0.2377	+7.92	+0.528	290 5	19 20.3	261 49	17 27.3	+1.0018	+1.2739	−8.07	−0.9069
	28	0.2405	8.08	0.539	290 29	19 21.9	260 45	17 23.0	1.0028	1.2741	8.05	0.9059
	29	0.2432	8.26	0.551	290 51	19 23.4	259 40	17 18.7	1.0046	1.2743	8.03	0.9047
	30	0.2460	8.39	0.559	291 7	19 24.5	258 36	17 14.4	1.0065	1.2745	8.01	0.9034
	31	0.2487	8.50	0.567	291 18	19 25.2	257 32	17 10.1	1.0085	1.2747	7.98	0.9020
Apr.	1	0.2514	+8.58	+0.572	291 24	19 25.6	256 28	17 5.9	+1.0103	+1.2750	−7.95	−0.9005
	2	0.2542	+8.62	+0.575	291 26	19 25.7	255 24	17 1.6	+1.0115	+1.2753	−7.92	−0.8988

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	*f*		*G*		*H*		Log *g*.	Log *h*.	*i*	Log *i*.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Apr.	1	0.2514	+ 8.58	+0.572	291 24	19 25.6	256 28	17 5.9	+1.0103	+1.2750	−7.95	−0.9005
	2	0.2542	8.62	0.575	291 26	19 25.7	255 24	17 1.6	1.0115	1.2753	7.92	0.8988
	3	0.2569	8.64	0.576	291 28	19 25.9	254 20	16 57.3	1.0119	1.2756	7.89	0.8969
	4	0.2597	8.67	0.578	291 32	19 26.1	253 16	16 53.1	1.0116	1.2760	7.85	0.8949
	5	0.2624	8.69	0.579	291 40	19 26.7	252 13	16 48.9	1.0107	1.2764	7.81	0.8927
$(13^{h}.0)$	6	0.2651	+ 8.75	+0.583	291 54	19 27.6	251 9	16 44.6	+1.0094	+1.2768	−7.77	−0.8904
	7	0.2679	8.86	0.591	292 14	19 28.9	250 6	16 40.4	1.0083	1.2772	7.73	0.8880
	8	0.2706	9.00	0.600	292 41	19 30.7	249 3	16 36.2	1.0075	1.2776	7.68	0.8855
	9	0.2734	9.18	0.612	293 10	19 32.7	248 0	16 32.0	1.0072	1.2780	7.63	0.8828
	10	0.2761	9.39	0.626	293 41	19 34.7	246 57	16 27.8	1.0078	1.2785	7.58	0.8799
	11	0.2788	+ 9.60	+0.640	294 10	19 36.7	245 55	16 23.7	+1.0092	+1.2789	−7.53	−0.8769
	12	0.2816	9.80	0.653	294 34	19 38.3	244 53	16 19.5	1.0113	1.2794	7.48	0.8738
	13	0.2843	9.96	0.664	294 53	19 39.5	243 51	16 15.4	1.0133	1.2799	7.42	0.8706
	14	0.2871	10.08	0.672	295 6	19 40.4	242 49	16 11.3	1.0153	1.2804	7.36	0.8673
	15	0.2898	10.18	0.679	295 14	19 40.9	241 47	16 7.1	1.0170	1.2809	7.30	0.8638
	16	0.2925	+10.23	+0.682	295 20	19 41.3	240 45	16 3.0	+1.0178	+1.2814	−7.24	−0.8601
	17	0.2953	10.27	0.685	295 25	19 41.7	239 44	15 59.0	1.0179	1.2820	7.18	0.8562
	18	0.2980	10.30	0.687	295 33	19 42.2	238 43	15 54.9	1.0173	1.2826	7.11	0.8521
	19	0.3008	10.35	0.690	295 46	19 43.1	237 42	15 50.8	1.0162	1.2832	7.04	0.8479
	20	0.3035	10.45	0.697	296 4	19 44.3	236 41	15 46.7	1.0149	1.2838	6.97	0.8435
$(14^{h}.0)$	21	0.3062	+10.56	+0.704	296 28	19 45.9	235 41	15 42.7	+1.0138	+1.2844	−6.90	−0.8389
	22	0.3090	10.72	0.715	296 56	19 47.7	234 41	15 38.7	1.0132	1.2850	6.83	0.8342
	23	0.3117	10.90	0.727	297 25	19 49.7	233 41	15 34.7	1.0132	1.2856	6.75	0.8293
	24	0.3145	11.09	0.739	297 54	19 51.6	232 40	15 30.7	1.0140	1.2862	6.67	0.8242
	25	0.3172	11.29	0.753	298 19	19 53.3	231 40	15 26.7	1.0155	1.2868	6.59	0.8190
	26	0.3199	+11.47	+0.765	298 39	19 54.6	230 40	15 22.7	+1.0175	+1.2874	−6.51	−0.8136
	27	0.3227	11.60	0.773	298 53	19 55.5	229 41	15 18.7	1.0195	1.2880	6.43	0.8080
	28	0.3254	11.71	0.781	299 3	19 56.2	228 42	15 14.8	1.0213	1.2886	6.34	0.8022
	29	0.3282	11.78	0.785	299 10	19 56.7	227 43	15 10.9	1.0226	1.2892	6.25	0.7962
	30	0.3309	11.84	0.789	299 16	19 57.1	226 44	15 6.9	1.0232	1.2899	6.16	0.7899
May	1	0.3336	+11.89	+0.793	299 24	19 57.6	225 45	15 3.0	+1.0231	+1.2905	−6.07	−0.7834
	2	0.3364	11.94	0.796	299 36	19 58.4	224 47	14 59.1	1.0223	1.2912	5.98	0.7767
	3	0.3391	12.02	0.801	299 54	19 59.6	223 49	14 55.3	1.0214	1.2918	5.89	0.7698
	4	0.3419	12.14	0.809	300 18	20 1.2	222 51	14 51.4	1.0205	1.2925	5.79	0.7627
	5	0.3446	12.31	0.821	300 48	20 3.2	221 53	14 47.5	1.0199	1.2931	5.69	0.7553
$(15^{h}.0)$	6	0.3473	+12.51	+0.834	301 20	20 5.3	220 55	14 43.7	+1.0201	+1.2938	−5.59	−0.7476
	7	0.3501	12.75	0.850	301 55	20 7.7	219 58	14 39.9	1.0211	1.2944	5.49	0.7396
	8	0.3528	12.98	0.865	302 27	20 9.8	219 1	14 36.1	1.0228	1.2950	5.39	0.7314
	9	0.3556	13.22	0.881	302 54	20 11.6	218 4	14 32.3	1.0252	1.2956	5.29	0.7230
	10	0.3583	13.43	0.895	303 16	20 13.1	217 7	14 28.5	1.0277	1.2962	5.18	0.7143
	11	0.3610	+13.60	+0.907	303 33	20 14.2	216 10	14 24.7	+1.0301	+1.2968	−5.07	−0.7053
	12	0.3637	13.74	0.916	303 45	20 15.0	215 13	14 20.9	1.0321	1.2974	4.96	0.6960
	13	0.3665	13.85	0.923	303 54	20 15.6	214 17	14 17.1	1.0336	1.2980	4.85	0.6864
	14	0.3692	13.92	0.928	304 3	20 16.2	213 21	14 13.4	1.0343	1.2986	4.74	0.6764
	15	0.3719	13.99	0.933	304 15	20 17.0	212 25	14 9.7	1.0343	1.2991	4.63	0.6661
	16	0.3746	+14.07	+0.938	304 31	20 18.1	211 29	14 5.9	+1.0339	+1.2997	−4.52	−0.6554
	17	0.3774	+14.17	+0.945	304 52	20 19.5	210 34	14 2.3	+1.0333	+1.3003	−4.41	−0.6443

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f		G		H		Log g.	Log h.	i	Log i.
		In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
	y	″	s	° ′	h m	° ′	h m			″	
May 17	0.3774	+14.17	+0.945	304 52	20 19.5	210 34	14 2.3	+1.0333	+1.3003	−4.41	−0.6443
18	0.3801	14.31	0.954	305 18	20 21.1	209 39	13 58.6	1.0329	1.3009	4.30	0.6327
19	0.3829	14.49	0.966	305 48	20 23.2	208 44	13 54.9	1.0329	1.3014	4.18	0.6207
20	0.3856	14.70	0.980	306 19	20 25.3	207 49	13 51.3	1.0337	1.3019	4.06	0.6083
$(16^{h}.0)$ 21	0.3883	14.93	0.995	306 49	20 27.3	206 54	13 47.6	1.0352	1.3024	3.94	0.5954
22	0.3911	+15.16	+1.011	307 16	20 29.1	205 59	13 43.9	+1.0374	+1.3029	−3.82	−0.5819
23	0.3938	15.37	1.025	307 38	20 30.5	205 4	13 40.3	1.0400	1.3034	3.70	0.5678
24	0.3966	15.56	1.037	307 54	20 31.6	204 9	13 36.6	1.0427	1.3039	3.58	0.5533
25	0.3993	15.71	1.047	308 5	20 32.3	203 15	13 33.0	1.0452	1.3043	3.45	0.5382
26	0.4020	15.83	1.055	308 12	20 32.8	202 21	13 29.4	1.0471	1.3048	3.33	0.5225
27	0.4048	+15.92	+1.061	308 19	20 33.3	201 27	13 25.8	+1.0484	+1.3052	−3.21	−0.5060
28	0.4075	16.00	1.067	308 28	20 33.9	200 33	13 22.2	1.0491	1.3056	3.08	0.4886
29	0.4103	16.08	1.072	308 41	20 34.7	199 39	13 18.6	1.0493	1.3060	2.95	0.4702
30	0.4130	16.18	1.079	308 59	20 35.9	198 45	13 15.0	1.0493	1.3064	2.82	0.4507
31	0.4157	16.32	1.088	309 22	20 37.5	197 51	13 11.4	1.0493	1.3068	2.69	0.4302
June 1	0.4185	+16.50	+1.100	309 51	20 39.4	196 57	13 7.8	+1.0497	+1.3072	−2.56	−0.4091
2	0.4212	16.72	1.115	310 22	20 41.5	196 4	13 4.3	1.0508	1.3075	2.43	0.3866
3	0.4240	16.97	1.131	310 54	20 43.6	195 11	13 0.7	1.0526	1.3078	2.30	0.3631
4	0.4267	17.25	1.150	311 24	20 45.6	194 18	12 57.2	1.0552	1.3081	2.17	0.3376
$(17^{h}.0)$ 5	0.4294	17.51	1.167	311 49	20 47.3	193 24	12 53.6	1.0582	1.3084	2.04	0.3105
6	0.4322	+17.75	+1.183	312 9	20 48.6	192 31	12 50.1	+1.0615	+1.3087	−1.91	−0.2815
7	0.4349	17.97	1.198	312 23	20 49.5	191 38	12 46.5	1.0648	1.3090	1.78	0.2505
8	0.4377	18.15	1.210	312 33	20 50.2	190 45	12 43.0	1.0676	1.3092	1.65	0.2167
9	0.4404	18.28	1.219	312 40	20 50.7	189 52	12 39.5	1.0698	1.3094	1.51	0.1800
10	0.4431	18.39	1.226	312 47	20 51.1	188 59	12 36.0	1.0714	1.3096	1.38	0.1398
11	0.4459	+18.48	+1.232	312 57	20 51.8	188 7	12 32.5	+1.0724	+1.3098	−1.24	−0.0955
12	0.4486	18.59	1.239	313 10	20 52.7	187 14	12 28.9	1.0730	1.3100	1.11	0.0459
13	0.4514	18.70	1.247	313 28	20 53.9	186 22	12 25.5	1.0733	1.3101	0.97	9.9900
14	0.4541	18.86	1.257	313 50	20 55.3	185 29	12 21.9	1.0738	1.3102	0.84	9.9261
15	0.4568	19.05	1.270	314 15	20 57.0	184 36	12 18.4	1.0748	1.3103	0.71	9.8508
16	0.4596	+19.27	+1.285	314 41	20 58.7	183 44	12 14.9	+1.0763	+1.3104	−0.57	−9.7585
17	0.4623	19.51	1.301	315 6	21 0.4	182 51	12 11.4	1.0785	1.3105	0.44	9.6421
18	0.4651	19.75	1.317	315 28	21 1.9	181 59	12 7.9	1.0813	1.3106	0.30	9.4815
19	0.4678	20.00	1.333	315 45	21 3.0	181 6	12 4.4	1.0845	1.3106	0.17	9.2269
20	0.4705	20.21	1.347	315 57	21 3.8	180 14	12 0.9	1.0876	1.3106	−0.03	−8.5065
$(18^{h}.0)$ 21	0.4733	+20.39	+1.359	316 3	21 4.2	179 21	11 57.4	+1.0907	+1.3106	+0.10	+9.0146
22	0.4760	20.53	1.369	316 7	21 4.5	178 29	11 53.9	1.0932	1.3105	0.24	9.3784
23	0.4788	20.64	1.376	316 10	21 4.7	177 36	11 50.4	1.0951	1.3105	0.37	9.5731
24	0.4815	20.73	1.382	316 14	21 4.9	176 43	11 46.9	1.0965	1.3105	0.51	9.7069
25	0.4842	20.81	1.387	316 22	21 5.5	175 51	11 43.4	1.0974	1.3104	0.64	9.8090
26	0.4869	+20.91	+1.394	316 33	21 6.2	174 58	11 39.9	+1.0982	+1.3103	+0.78	+9.8913
27	0.4897	21.05	1.403	316 50	21 7.3	174 6	11 36.4	1.0989	1.3102	0.91	9.9611
28	0.4924	21.22	1.415	317 11	21 8.7	173 13	11 32.9	1.1000	1.3101	1.05	0.0198
29	0.4951	21.44	1.429	317 35	21 10.3	172 21	11 29.4	1.1016	1.3099	1.18	0.0723
30	0.4978	21.69	1.446	317 59	21 11.9	171 28	11 25.9	1.1038	1.3097	1.31	0.1190
July 1	0.5006	+21.96	+1.464	318 21	21 13.4	170 35	11 22.3	+1.1067	+1.3095	+1.45	+0.1609
2	0.5033	+22.23	+1.482	318 39	21 14.6	169 42	11 18.8	+1.1100	+1.3093	+1.58	+0.1993

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)	τ	f In Arc.	f In Time.	G In Arc.	G In Time.	H In Arc.	H In Time.	Log g.	Log h.	i	Log i.
	y	″	s	° ′	h m	° ′	h m			″	
July 1	0.5006	+21.96	+1.464	318 21	21 13.4	170 35	11 22.3	+1.1067	+1.3095	+1.45	+0.1609
2	0.5033	22.23	1.482	318 39	21 14.6	169 42	11 18.8	1.1100	1.3093	1.58	0.1993
3	0.5061	22.48	1.499	318 52	21 15.5	168 49	11 15.3	1.1135	1.3091	1.72	0.2342
4	0.5088	22.71	1.514	319 0	21 16.0	167 56	11 11.7	1.1170	1.3088	1.85	0.2663
5	0.5115	22.90	1.527	319 4	21 16.3	167 3	11 8.2	1.1201	1.3085	1.98	0.2963
$(19^{h}.0)$ 6	0.5143	+23.04	+1.536	319 6	21 16.4	166 10	11 4.7	+1.1227	+1.3082	+2.11	+0.3243
7	0.5170	23.15	1.543	319 7	21 16.5	165 17	11 1.1	1.1247	1.3079	2.24	0.3504
8	0.5198	23.25	1.550	319 11	21 16.7	164 24	10 57.6	1.1260	1.3076	2.37	0.3749
9	0.5225	23.34	1.556	319 17	21 17.1	163 31	10 54.1	1.1271	1.3073	2.50	0.3980
10	0.5252	23.45	1.563	319 28	21 17.9	162 38	10 50.5	1.1279	1.3070	2.63	0.4197
11	0.5280	+23.58	+1.572	319 43	21 18.9	161 45	10 47.0	+1.1287	+1.3066	+2.76	+0.4403
12	0.5307	23.74	1.583	320 0	21 20.0	160 51	10 43.4	1.1300	1.3062	2.89	0.4599
13	0.5335	23.94	1.596	320 18	21 21.2	159 57	10 39.8	1.1317	1.3058	3.01	0.4785
14	0.5362	24.17	1.611	320 36	21 22.4	159 3	10 36.2	1.1339	1.3054	3.13	0.4964
15	0.5389	24.41	1.627	320 50	21 23.3	158 9	10 32.6	1.1366	1.3050	3.26	0.5136
16	0.5417	+24.63	+1.642	321 1	21 24.1	157 15	10 29.0	+1.1396	+1.3046	+3.39	+0.5299
17	0.5444	24.85	1.657	321 7	21 24.5	156 21	10 25.4	1.1427	1.3042	3.51	0.5454
18	0.5472	25.02	1.668	321 8	21 24.5	155 27	10 21.8	1.1456	1.3037	3.63	0.5601
19	0.5499	25.16	1.677	321 7	21 24.5	154 32	10 18.1	1.1481	1.3032	3.75	0.5739
20	0.5526	25.25	1.683	321 4	21 24.3	153 38	10 14.5	1.1501	1.3027	3.87	0.5874
$(20^{h}.0)$ 21	0.5554	+25.33	+1.689	321 3	21 24.2	152 43	10 10.9	+1.1515	+1.3022	+3.99	+0.6005
22	0.5581	25.40	1.693	321 4	21 24.3	151 49	10 7.3	1.1526	1.3017	4.11	0.6132
23	0.5609	25.48	1.699	321 8	21 24.5	150 54	10 3.6	1.1534	1.3012	4.23	0.6255
24	0.5636	25.58	1.705	321 18	21 25.2	149 59	9 59.9	1.1542	1.3006	4.34	0.6375
25	0.5663	25.71	1.714	321 31	21 26.1	149 4	9 56.3	1.1552	1.3001	4.46	0.6490
26	0.5691	+25.89	+1.726	321 46	21 27.1	148 9	9 52.6	+1.1567	+1.2995	+4.57	+0.6600
27	0.5718	26.11	1.741	322 3	21 28.2	147 14	9 48.9	1.1586	1.2990	4.68	0.6705
28	0.5746	26.35	1.757	322 18	21 29.2	146 19	9 45.2	1.1611	1.2984	4.79	0.6805
29	0.5773	26.59	1.773	322 30	21 30.0	145 23	9 41.5	1.1639	1.2978	4.90	0.6900
30	0.5800	26.83	1.789	322 37	21 30.5	144 27	9 37.8	1.1672	1.2972	5.01	0.6993
31	0.5828	+27.05	+1.803	322 41	21 30.7	143 31	9 34.1	+1.1702	+1.2966	+5.12	+0.7083
Aug. 1	0.5855	27.22	1.815	322 41	21 30.7	142 35	9 30.3	1.1730	1.2960	5.22	0.7171
2	0.5883	27.35	1.823	322 39	21 30.6	141 39	9 26.6	1.1753	1.2954	5.32	0.7257
3	0.5910	27.45	1.830	322 36	21 30.4	140 42	9 22.8	1.1771	1.2948	5.42	0.7342
4	0.5937	27.52	1.835	322 34	21 30.3	139 45	9 19.0	1.1783	1.2942	5.52	0.7423
$(21^{h}.0)$ 5	0.5965	+27.58	+1.839	322 35	21 30.3	138 48	9 15.2	+1.1792	+1.2936	+5.62	+0.7501
6	0.5992	27.65	1.843	322 40	21 30.7	137 50	9 11.3	1.1799	1.2930	5.72	0.7576
7	0.6020	27.74	1.849	322 49	21 31.3	136 53	9 7.5	1.1805	1.2923	5.82	0.7648
8	0.6047	27.87	1.858	323 0	21 32.0	135 55	9 3.7	1.1815	1.2916	5.91	0.7717
9	0.6074	28.03	1.869	323 13	21 32.9	134 57	8 59.8	1.1827	1.2910	6.00	0.7784
10	0.6102	+28.21	+1.881	323 25	21 33.7	133 59	8 55.9	+1.1844	+1.2903	+6.09	+0.7849
11	0.6129	28.42	1.895	323 35	21 34.3	133 1	8 52.1	1.1865	1.2897	6.18	0.7912
12	0.6157	28.63	1.909	323 42	21 34.8	132 3	8 48.2	1.1890	1.2891	6.27	0.7973
13	0.6184	28.80	1.920	323 46	21 35.1	131 4	8 44.3	1.1915	1.2885	6.36	0.8033
14	0.6211	28.96	1.931	323 44	21 34.9	130 5	8 40.3	1.1939	1.2878	6.44	0.8090
15	0.6238	+29.07	+1.938	323 41	21 34.7	129 6	8 36.4	+1.1959	+1.2872	+6.52	+0.8145
16	0.6266	+29.16	+1.944	323 35	21 34.3	128 7	8 32.5	+1.1976	+1.2866	+6.60	+0.8188

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Aug.	16	0.6266	+29.16	+1.944	323 35	21 34.3	128 7	8 32.5	+1.1976	+1.2866	+6.60	+0.8198
	17	0.6293	29.20	1.947	323 31	21 34.1	127 8	8 28.5	1.1987	1.2860	6.68	0.8250
	18	0.6320	29.23	1.949	323 28	21 33.9	126 9	8 24.6	1.1995	1.2854	6.76	0.8300
	19	0.6347	29.27	1.951	323 29	21 33.9	125 9	8 20.6	1.2000	1.2848	6.83	0.8348
$(22^{h}.0)$	20	0.6375	29.33	1.955	323 34	21 34.3	124 9	8 16.6	1.2004	1.2842	6.90	0.8395
	21	0.6402	+29.43	+1.962	323 42	21 34.8	123 9	8 12.6	+1.2010	+1.2836	+6.97	+0.8440
	22	0.6430	29.55	1.970	323 54	21 35.6	122 9	8 8.6	1.2018	1.2830	7.04	0.8483
	23	0.6457	29.73	1.982	324 7	21 36.5	121 9	8 4.6	1.2031	1.2825	7.11	0.8524
	24	0.6484	29.92	1.995	324 19	21 37.3	120 8	8 0.5	1.2049	1.2819	7.18	0.8564
	25	0.6512	30.14	2.009	324 28	21 37.9	119 8	7 56.5	1.2072	1.2814	7.25	0.8602
	26	0.6539	+30.35	+2.023	324 35	21 38.3	118 7	7 52.5	+1.2096	+1.2809	+7.31	+0.8639
	27	0.6567	30.54	2.036	324 38	21 38.5	117 6	7 48.4	1.2120	1.2804	7.37	0.8674
	28	0.6594	30.68	2.045	324 36	21 38.4	116 5	7 44.3	1.2143	1.2799	7.43	0.8708
	29	0.6621	30.80	2.053	324 33	21 38.2	115 4	7 40.3	1.2161	1.2794	7.48	0.8740
	30	0.6649	30.87	2.058	324 29	21 37.9	114 2	7 36.1	1.2176	1.2789	7.53	0.8771
	31	0.6676	+30.91	+2.061	324 26	21 37.7	113 0	7 32.0	+1.2185	+1.2784	+7.58	+0.8800
Sept.	1	0.6704	30.95	2.063	324 25	21 37.7	111 58	7 27.9	1.2191	1.2780	7.63	0.8828
	2	0.6731	30.98	2.065	324 28	21 37.9	110 56	7 23.7	1.2193	1.2776	7.68	0.8855
	3	0.6758	31.04	2.069	324 34	21 38.3	109 54	7 19.6	1.2195	1.2772	7.72	0.8881
	4	0.6786	31.13	2.075	324 43	21 38.9	108 52	7 15.5	1.2199	1.2768	7.76	0.8905
$(23^{h}.0)$	5	0.6813	+31.25	+2.083	324 54	21 39.6	107 49	7 11.3	+1.2206	+1.2764	+7.80	+0.8927
	6	0.6841	31.40	2.093	325 6	21 40.4	106 46	7 7.1	1.2216	1.2760	7.84	0.8947
	7	0.6868	31.57	2.105	325 16	21 41.1	105 43	7 2.9	1.2231	1.2757	7.88	0.8966
	8	0.6895	31.75	2.117	325 23	21 41.5	104 40	6 58.7	1.2249	1.2754	7.91	0.8984
	9	0.6923	31.92	2.128	325 27	21 41.8	103 37	6 54.5	1.2269	1.2751	7.94	0.9001
	10	0.6950	+32.05	+2.137	325 27	21 41.8	102 34	6 50.3	+1.2287	+1.2748	+7.97	+0.9017
	11	0.6978	32.17	2.145	325 24	21 41.6	101 31	6 46.1	1.2303	1.2745	8.00	0.9032
	12	0.7005	32.23	2.149	325 20	21 41.3	100 28	6 41.9	1.2316	1.2742	8.02	0.9045
	13	0.7032	32.25	2.150	325 16	21 41.1	99 25	6 37.7	1.2323	1.2740	8.04	0.9057
	14	0.7060	32.26	2.151	325 13	21 40.9	98 21	6 33.4	1.2328	1.2738	8.06	0.9068
	15	0.7087	+32.27	+2.151	325 14	21 40.9	97 17	6 29.1	+1.2329	+1.2736	+8.08	+0.9077
	16	0.7115	32.29	2.153	325 18	21 41.2	96 13	6 24.9	1.2329	1.2735	8.10	0.9085
	17	0.7142	32.36	2.157	325 26	21 41.7	95 9	6 20.6	1.2329	1.2734	8.11	0.9092
	18	0.7169	32.46	2.164	325 37	21 42.5	94 5	6 16.3	1.2333	1.2733	8.11	0.9097
	19	0.7197	32.60	2.173	325 50	21 43.3	93 1	6 12.1	1.2341	1.2732	8.12	0.9101
$(0^{h}.0)$	20	0.7224	+32.77	+2.185	326 3	21 44.2	91 57	6 7.8	+1.2353	+1.2732	+8.12	+0.9104
	21	0.7252	32.96	2.197	326 13	21 44.9	90 53	6 3.5	1.2369	1.2731	8.13	0.9106
	22	0.7279	33.16	2.211	326 21	21 45.4	89 49	5 59.3	1.2388	1.2731	8.13	0.9106
	23	0.7306	33.34	2.223	326 26	21 45.7	88 45	5 55.0	1.2407	1.2731	8.13	0.9105
	24	0.7334	33.49	2.233	326 27	21 45.8	87 41	5 50.7	1.2426	1.2732	8.12	0.9103
	25	0.7361	+33.60	+2.240	326 27	21 45.8	86 37	5 46.5	+1.2441	+1.2732	+8.12	+0.9100
	26	0.7389	33.68	2.245	326 25	21 45.7	85 33	5 42.2	1.2453	1.2733	8.11	0.9096
	27	0.7416	33.73	2.249	326 23	21 45.5	84 29	5 37.9	1.2461	1.2734	8.11	0.9090
	28	0.7443	33.75	2.250	326 24	21 45.6	83 25	5 33.7	1.2463	1.2736	8.10	0.9083
	29	0.7470	33.78	2.252	326 27	21 45.8	82 21	5 29.4	1.2463	1.2738	8.08	0.9075
	30	0.7498	+33.83	+2.255	326 35	21 46.3	81 16	5 25.1	+1.2463	+1.2740	+8.06	+0.9065
Oct.	1	0.7525	+33.88	+2.259	326 45	21 47.0	80 12	5 20.8	+1.2462	+1.2742	+8.04	+0.9054

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Oct.	1	0.7525	+33.88	+2.259	326 45	21 47.0	80 12	5 20.8	+1.2462	+1.2742	+8.04	+0.9054
	2	0.7552	33.99	2.266	326 57	21 47.8	79 8	5 16.5	1.2466	1.2744	8.02	0.9041
	3	0.7579	34.14	2.276	327 10	21 48.7	78 4	5 12.3	1.2474	1.2746	8.00	0.9026
	4	0.7607	34.30	2.287	327 23	21 49.5	77 0	5 8.0	1.2484	1.2749	7.97	0.9010
$(1^{h}.0)$	5	0.7634	34.47	2.298	327 33	21 50.2	75 56	5 3.7	1.2498	1.2752	7.94	0.8993
	6	0.7662	+34.65	+2.310	327 40	21 50.7	74 52	4 59.5	+1.2515	+1.2755	+7.90	+0.8975
	7	0.7689	34.80	2.320	327 44	21 50.9	73 48	4 55.2	1.2531	1.2758	7.86	0.8956
	8	0.7716	34.91	2.327	327 44	21 50.9	72 44	4 50.9	1.2545	1.2761	7.82	0.8936
	9	0.7744	34.99	2.333	327 43	21 50.9	71 40	4 46.7	1.2555	1.2765	7.78	0.8914
	10	0.7771	35.04	2.336	327 41	21 50.7	70 36	4 42.4	1.2563	1.2769	7.74	0.8891
	11	0.7799	+35.07	+2.338	327 41	21 50.7	69 32	4 38.1	+1.2566	+1.2773	+7.70	+0.8866
	12	0.7826	35.09	2.339	327 44	21 50.9	68 29	4 33.9	1.2566	1.2777	7.66	0.8840
	13	0.7853	35.11	2.341	327 50	21 51.3	67 25	4 29.7	1.2564	1.2782	7.61	0.8812
	14	0.7881	35.17	2.345	327 59	21 51.9	66 22	4 25.5	1.2564	1.2787	7.56	0.8782
	15	0.7908	35.26	2.351	328 12	21 52.8	65 19	4 21.3	1.2565	1.2792	7.50	0.8751
	16	0.7936	+35.40	+2.360	328 27	21 53.8	64 16	4 17.1	+1.2571	+1.2797	+7.44	+0.8719
	17	0.7963	35.57	2.371	328 41	21 54.7	63 13	4 12.9	1.2581	1.2802	7.38	0.8686
	18	0.7990	35.78	2.385	328 55	21 55.7	62 10	4 8.7	1.2595	1.2807	7.32	0.8651
	19	0.8018	35.99	2.399	329 7	21 56.5	61 7	4 4.5	1.2612	1.2812	7.26	0.8614
$(2^{h}.0)$	20	0.8045	36.20	2.413	329 14	21 56.9	60 4	4 0.3	1.2632	1.2818	7.20	0.8575
	21	0.8073	+36.38	+2.425	329 19	21 57.3	59 2	3 56.2	+1.2650	+1.2824	+7.13	+0.8534
	22	0.8100	36.53	2.435	329 22	21 57.5	58 0	3 52.0	1.2665	1.2830	7.06	0.8491
	23	0.8127	36.63	2.442	329 23	21 57.5	56 58	3 47.9	1.2677	1.2836	6.99	0.8447
	24	0.8155	36.71	2.447	329 24	21 57.6	55 56	3 43.7	1.2686	1.2842	6.92	0.8401
	25	0.8182	36.76	2.451	329 27	21 57.8	54 54	3 39.6	1.2689	1.2848	6.84	0.8353
	26	0.8210	+36.81	+2.454	329 32	21 58.1	53 52	3 35.5	+1.2691	+1.2854	+6.76	+0.8303
	27	0.8237	36.87	2.458	329 41	21 58.7	52 50	3 31.4	1.2692	1.2861	6.68	0.8251
	28	0.8264	36.96	2.464	329 52	21 59.5	51 49	3 27.3	1.2693	1.2867	6.60	0.8197
	29	0.8292	37.08	2.472	330 7	22 0.5	50 48	3 23.2	1.2697	1.2874	6.52	0.8141
	30	0.8319	37.24	2.483	330 22	22 1.5	49 46	3 19.1	1.2705	1.2880	6.43	0.8083
	31	0.8347	+37.43	+2.495	330 37	22 2.5	48 45	3 15.0	+1.2716	+1.2887	+6.34	+0.8023
Nov.	1	0.8374	37.64	2.509	330 50	22 3.3	47 44	3 10.9	1.2731	1.2893	6.25	0.7962
	2	0.8401	37.83	2.522	331 0	22 4.0	46 44	3 6.9	1.2747	1.2900	6.16	0.7899
	3	0.8429	38.03	2.535	331 7	22 4.5	45 43	3 2.9	1.2764	1.2906	6.07	0.7833
	4	0.8456	38.18	2.545	331 11	22 4.7	44 43	2 58.9	1.2779	1.2913	5.97	0.7764
$(3^{h}.0)$	5	0.8484	+38.31	+2.554	331 12	22 4.8	43 43	2 54.9	+1.2792	+1.2919	+5.87	+0.7692
	6	0.8511	38.41	2.561	331 13	22 4.9	42 42	2 50.9	1.2803	1.2926	5.77	0.7617
	7	0.8538	38.47	2.565	331 14	22 4.9	41 42	2 46.8	1.2809	1.2932	5.67	0.7539
	8	0.8566	38.51	2.567	331 18	22 5.2	40 42	2 42.8	1.2811	1.2939	5.57	0.7459
	9	0.8593	38.58	2.572	331 25	22 5.7	39 42	2 38.8	1.2813	1.2945	5.47	0.7376
	10	0.8621	+38.66	+2.577	331 35	22 6.3	38 43	2 34.9	+1.2816	+1.2952	+5.36	+0.7290
	11	0.8648	38.77	2.585	331 48	22 7.2	37 43	2 30.9	1.2820	1.2958	5.25	0.7200
	12	0.8675	38.93	2.595	332 4	22 8.3	36 44	2 26.9	1.2827	1.2964	5.14	0.7107
	13	0.8703	39.14	2.609	332 20	22 9.3	35 45	2 23.0	1.2839	1.2971	5.03	0.7011
	14	0.8730	39.37	2.625	332 34	22 10.3	34 46	2 19.1	1.2855	1.2977	4.92	0.6912
	15	0.8758	+39.62	+2.641	332 47	22 11.1	33 47	2 15.1	+1.2875	+1.2983	+4.80	+0.6809
	16	0.8785	+39.87	+2.658	332 56	22 11.7	32 48	2 11.2	+1.2896	+1.2989	+4.68	+0.6703

FOR WASHINGTON MEAN MIDNIGHT.

Solar Day. (Sid. Hour.)		τ	f		G		H		Log g.	Log h.	i	Log i.
			In Arc.	In Time.	In Arc.	In Time.	In Arc.	In Time.				
		y	″	s	° ′	h m	° ′	h m			″	
Nov.	16	0.8785	+39.87	+2.658	332 56	22 11.7	32 48	2 11.2	+1.2896	+1.2989	+4.68	+0.6703
	17	0.8812	40.09	2.673	333 2	22 12.1	31 49	2 7.3	1.2916	1.2995	4.56	0.6593
	18	0.8839	40.29	2.686	333 6	22 12.4	30 51	2 3.4	1.2935	1.3001	4.44	0.6478
	19	0.8867	40.45	2.697	333 8	22 12.5	29 53	1 59.5	1.2951	1.3007	4.32	0.6358
$(4^{h}.0)$	20	0.8894	40.57	2.705	333 10	22 12.7	28 55	1 55.7	1.2963	1.3013	4.20	0.6233
	21	0.8921	+40.66	+2.711	333 13	22 12.9	27 57	1 51.8	+1.2971	+1.3018	+4.08	+0.6104
	22	0.8948	40.76	2.717	333 19	22 13.3	26 59	1 47.9	1.2977	1.3024	3.96	0.5969
	23	0.8976	40.85	2.723	333 27	22 13.8	26 1	1 44.1	1.2982	1.3029	3.83	0.5828
	24	0.9003	40.97	2.731	333 38	22 14.5	25 4	1 40.3	1.2987	1.3034	3.70	0.5681
	25	0.9031	41.11	2.741	333 52	22 15.5	24 6	1 36.4	1.2994	1.3039	3.57	0.5528
	26	0.9058	+41.29	+2.753	334 6	22 16.4	23 9	1 32.6	+1.3005	+1.3044	+3.44	+0.5368
	27	0.9085	41.52	2.767	334 20	22 17.3	22 11	1 28.7	1.3019	1.3049	3.31	0.5200
	28	0.9113	41.75	2.783	334 33	22 18.2	21 14	1 24.9	1.3037	1.3054	3.18	0.5022
	29	0.9140	42.00	2.800	334 42	22 18.8	20 17	1 21.1	1.3056	1.3058	3.05	0.4835
	30	0.9168	42.24	2.816	334 49	22 19.3	19 20	1 17.3	1.3077	1.3062	2.92	0.4639
Dec.	1	0.9195	+42.44	+2.829	334 52	22 19.5	18 23	1 13.5	+1.3096	+1.3066	+2.78	+0.4434
	2	0.9222	42.62	2.841	334 54	22 19.6	17 26	1 9.7	1.3113	1.3070	2.65	0.4216
	3	0.9250	42.75	2.850	334 54	22 19.6	16 29	1 5.9	1.3126	1.3074	2.51	0.3984
	4	0.9277	42.85	2.857	334 55	22 19.7	15 32	1 2.1	1.3136	1.3077	2.37	0.3739
$(5^{h}.0)$	5	0.9305	42.93	2.862	334 57	22 19.8	14 35	0 58.3	1.3143	1.3080	2.23	0.3475
	6	0.9332	+43.02	+2.868	335 2	22 20.1	13 39	0 54.6	+1.3149	+1.3083	+2.09	+0.3195
	7	0.9359	43.13	2.875	335 10	22 20.7	12 42	0 50.8	1.3155	1.3086	1.95	0.2894
	8	0.9387	43.27	2.885	335 20	22 21.3	11 45	0 47.0	1.3162	1.3089	1.81	0.2567
	9	0.9414	43.44	2.896	335 33	22 22.2	10 49	0 43.3	1.3173	1.3092	1.67	0.2213
	10	0.9442	43.65	2.910	335 46	22 23.1	9 53	0 39.5	1.3187	1.3094	1.53	0.1828
	11	0.9469	+43.91	+2.927	335 59	22 23.9	8 57	0 35.8	+1.3205	+1.3096	+1.38	+0.1401
	12	0.9496	44.19	2.946	336 9	22 24.6	8 0	0 32.0	1.3227	1.3098	1.24	0.0928
	13	0.9524	44.46	2.964	336 17	22 25.1	7 4	0 28.3	1.3249	1.3100	1.09	0.0401
	14	0.9551	44.72	2.981	336 21	22 25.4	6 8	0 24.5	1.3272	1.3102	0.95	9.9789
	15	0.9579	44.96	2.997	336 23	22 25.5	5 12	0 20.8	1.3294	1.3103	0.80	9.9081
	16	0.9606	+45.15	+3.010	336 23	22 25.5	4 16	0 17.1	+1.3313	+1.3104	+0.66	+9.8232
	17	0.9633	45.31	3.021	336 23	22 25.5	3 20	0 13.3	1.3328	1.3104	0.52	9.7166
	18	0.9661	45.43	3.029	336 23	22 25.5	2 24	0 9.6	1.3340	1.3105	0.38	9.5762
	19	0.9688	45.55	3.037	336 26	22 25.7	1 28	0 5.9	1.3349	1.3105	0.23	9.3654
$(6^{h}.0)$	20	0.9716	45.65	3.043	336 31	22 26.1	0 32	0 2.1	1.3357	1.3106	+0.09	+8.9395
	21	0.9743	+45.78	+3.052	336 38	22 26.5	359 36	23 58.4	+1.3365	+1.3106	−0.05	−8.7492
	22	0.9770	45.94	3.063	336 48	22 27.2	358 40	23 54.7	1.3375	1.3106	0.20	9.3032
	23	0.9798	46.13	3.075	336 59	22 27.9	357 44	23 50.9	1.3386	1.3105	0.34	9.5383
	24	0.9825	46.35	3.090	337 10	22 28.7	356 48	23 47.2	1.3402	1.3105	0.49	9.6904
	25	0.9853	46.60	3.107	337 19	22 29.3	355 52	23 43.5	1.3420	1.3104	0.63	9.8027
	26	0.9880	+46.86	+3.124	337 26	22 29.7	354 55	23 39.7	+1.3440	+1.3103	−0.78	−9.8915
	27	0.9907	47.11	3.141	337 30	22 30.0	353 59	23 35.9	1.3461	1.3102	0.92	9.9650
	28	0.9935	47.34	3.156	337 31	22 30.1	353 3	23 32.2	1.3481	1.3100	1.07	0.0279
	29	0.9962	47.52	3.168	337 29	22 29.9	352 7	23 28.5	1.3499	1.3098	1.21	0.0822
	30	0.9990	47.67	3.178	337 27	22 29.8	351 11	23 24.7	1.3515	1.3096	1.36	0.1309
	31	1.0017	+47.79	+3.186	337 24	22 29.6	350 14	23 20.9	+1.3527	+1.3094	−1.50	−0.1745
	32	1.0044	+47.89	+3.193	337 23	22 29.5	349 18	23 17.2	+1.3537	+1.3092	−1.64	−0.2141

MEAN PLACES FOR 1894.0. (January 0d.0—0d.351, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
α Andromedæ	2.1	0	2	54.483	+ 3.0923	+ 28	30	18.61	+ 19.884
* β Cassiopeæ	2.4	0	3	31.298	3.1765	+ 58	33	53.22	19.851
*22 Andromedæ	4.9	0	4	48.692	3.1038	+ 45	28	55.83	20.035
4 Draconis (H.) S.P.	5.1	0	7	14.322	2.8804	+101	47	41.11	20.021
γ Pegasi (*Algenib*)	2.8	0	7	46.624	3.0842	+ 14	35	39.14	20.023
* σ Andromedæ	4.4	0	12	47.413	+ 3.1241	+ 36	11	50.87	+ 19.981
* ι Ceti	3.6	0	14	1.439	3.0527	− 9	24	42.68	19.955
* 6 Ursæ Minoris S.P.	6.2	0	14	21.114	0.2010	+ 91	42	44.33	19.940
*44 Piscium	5.8	0	19	58.102	3.0733	+ 1	21	9.49	19.952
β Hydri	2.8	0	20	10.455	3.2244	− 77	51	4.66	20.282
12 Ceti	6.0	0	24	37.733	+ 3.0611	− 4	32	34.72	+ 19.935
κ Draconis S.P.	3.8	0	28	57.587	2.5894	+109	37	39.11	19.887
* π Andromedæ	4.4	0	31	13.101	3.1917	+ 33	8	8.63	19.868
α Cassiopeæ (*var.*)	2.3	0	34	29.551	3.3763	+ 55	57	21.18	19.785
β Ceti	2.2	0	38	16.149	3.0140	− 18	34	6.92	19.798
21 Cassiopeæ	5.7	0	38	38.668	+ 3.8650	+ 74	24	31.07	+ 19.743
* ο Cassiopeæ	4.7	0	38	49.026	3.3211	+ 47	42	14.75	19.751
* δ Piscium	4.8	0	43	10.919	3.1077	+ 7	0	29.21	19.649
32^2 Camelop. (H.) S.P.	5.2	0	48	21.051	0.4024	+ 96	0	39.62	19.595
* γ Cassiopeæ	2.3	0	50	18.603	3.5822	+ 60	8	33.20	19.558
* μ Andromedæ	4.0	0	50	52.103	+ 3.3125	+ 37	55	27.95	+ 19.612
*43 Cephei (H.)	4.6	0	54	17.279	7.2978	+ 85	41	18.01	19.493
ε Piscium	4.3	0	57	26.476	3.1095	+ 7	19	9.69	19.450
β Andromedæ	2.2	1	3	47.806	3.3456	+ 35	3	30.36	19.159
* κ Tucanæ	4.9	1	12	10.630	2.0543	− 69	26	20.48	19.166
* *f* Piscium	5.1	1	12	19.821	+ 3.0900	+ 3	3	22.23	+ 19.032
θ^1 Ceti	3.6	1	18	43.477	2.9971	− 8	43	49.50	18.661
α Ursæ Minoris (*Polaris*)	2.2	1	20	5.913	24.0665	+ 88	44	33.85	18.840
38 Cassiopeæ	5.9	1	23	20.454	4.3844	+ 69	43	7.96	18.666
* κ Octantis S.P.	5.4	1	23	50.766	8.8145	− 94	45	27.44	18.728
η Piscium	3.7	1	25	48.636	+ 3.2032	+ 14	47	57.43	+ 18.656
* υ Andromedæ	4.2	1	30	34.546	3.5060	+ 40	52	31.13	18.137
* π Piscium	5.5	1	31	28.738	3.1747	+ 11	35	57.73	18.524
α Eridani (*Achernar*)	0.4	1	33	45.623	2.2318	− 57	46	31.40	18.351
* ν Piscium	4.6	1	35	54.880	3.1182	+ 4	57	3.90	18.321
ο Piscium	4.4	1	39	47.745	+ 3.1627	+ 8	37	26.12	+ 18.208
* ζ Ceti	3.6	1	46	13.694	2.9619	− 10	51	35.66	17.814
β Arietis	2.8	1	48	47.005	3.3044	+ 20	17	22.99	17.718
50 Cassiopeæ	4.1	1	54	22.906	5.0197	+ 71	54	29.45	17.630
* γ Andromedæ	2.2	1	57	23.493	3.6622	+ 41	49	15.15	17.431
α Arietis	2.1	2	1	11.834	+ 3.3719	+ 22	57	39.70	+ 17.161
α Draconis S.P.	3.7	2	1	31.225	1.6240	+115	7	3.47	17.294
* β Trianguli	3.1	2	3	14.152	3.5560	+ 34	29	8.65	17.192
ξ^1 Ceti	4.5	2	7	22.885	+ 3.1746	+ 8	20	57.35	17.019
* 4 Ursæ Minoris S.P.	4.9	2	9	15.747	− 0.3157	+101	57	15.57	16.905
* γ Trianguli	4.3	2	11	0.714	+ 3.5523	+ 33	21	24.55	+ 16.833
*67 Ceti	5.6	2	11	41.727	2.9896	− 6	54	39.25	16.722
* δ Hydri	4.2	2	19	51.837	1.0561	− 69	8	30.16	16.446
ι Cassiopeæ	4.6	2	20	19.613	4.8683	+ 66	55	31.89	16.414
ξ^2 Ceti	4.5	2	22	31.375	+ 3.1842	+ 7	59	4.89	+ 16.282

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1894.0. (January 0^d.0—0^d.351, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
5 Ursæ Minoris S. P.	4.5	2	27	45.050	— 0.1848	+103	49	58.20	+ 16.012
* μ Hydri	5.3	2	33	54.826	— 1.4235	— 79	34	17.51	15.687
* δ Ceti	4.1	2	34	2.961	+ 3.0732	— 0	7	44.88	15.685
* θ Persei	4.2	2	36	57.553	4.0721	+ 48	46	47.22	15.441
γ Ceti	3.6	2	37	48.440	3.1037	+ 2	47	19.89	15.326
* σ Arietis	5.5	2	45	38.380	+ 3.3052	+ 14	38	41.95	+ 15.000
β Ursæ Minoris S. P.	2.2	2	51	0.912	— 0.2264	+105	24	40.83	14.720
*47 Cephei (H.)	5.7	2	51	59.763	+ 7.7426	+ 78	59	56.90	14.661
* ε Arietis	4.6	2	53	9.015	3.4219	+ 20	54	58.51	14.595
α Ceti	2.6	2	56	44.262	3.1308	+ 3	40	25.05	14.294
* β Persei (*Algol*) (*var.*)	2.3	3	1	16.233	+ 3.8852	+ 40	32	48.75	+ 14.102
48 Cephei (H.)	5.5	3	6	52.362	7.4231	+ 77	20	40.83	13.695
ζ Arietis	4.8	3	8	48.473	3.4401	+ 20	39	4.79	13.540
α Persei	1.9	3	16	45.296	+ 4.2598	+ 49	29	0.66	13.072
* ι Hydri	5.7	3	18	36.296	— 1.5894	— 77	46	31.30	13.034
* ρ Octantis S. P.	5.7	3	18	52.928	+13.0413	— 95	53	21.11	+ 12.921
γ^2 Ursæ Minoris S. P.	3.2	3	20	53.884	— 0.1302	+107	47	19.78	12.812
* *f* Tauri	4.3	3	25	1.186	+ 3.3055	+ 12	34	23.63	12.552
ε Eridani	3.7	3	27	56.155	2.8238	— 9	49	1.46	12.379
δ Persei	3.1	3	35	22.655	4.2519	+ 47	26	53.36	11.788
* γ Camelopardalis (H.)	4.6	3	39	10.091	+ 6.2457	+ 71	0	18.13	+ 11.511
η Tauri	3.1	3	41	10.939	3.5577	+ 23	46	37.14	11.362
ζ Persei	3.0	3	47	28.097	+ 3.7612	+ 31	34	6.05	10.930
ζ Ursæ Minoris S. P.	4.6	3	47	50,956	— 2.2423	+101	52	46.48	10.933
* γ Hydri	3.3	3	48	52.780	— 0.9918	— 74	33	49.31	10.987
* e Persei	3.0	3	50	44.334	+ 4.0112	+ 39	42	11.39	+ 10.700
γ Eridani	3.0	3	53	5.065	2.7988	— 13	48	37.20	10.430
* A^1 Tauri	4.6	3	58	25.697	3.5406	+ 21	47	30.18	10.064
* *c* Persei	4.3	4	0	57.922	4.3388	+ 47	25	44.46	9.916
Groombr. 2320 S. P.	5.5	4	6	1.746	0.1416	+111	54	37.85	9.497
* o^1 Eridani	4.2	4	6	41.459	+ 2.9270	— 7	6	51.57	+ 9.600
γ Tauri	3.8	4	13	45.646	+ 3.4095	+ 15	22	16.87	8.938
* η Ursæ Minoris S. P.	5.0	4	20	36.219	— 1.8112	+104	0	1.70	8.173
ε Tauri	3.6	4	22	25.579	+ 3.4980	+ 18	56	41.79	8.238
η Draconis S. P.	2.8	4	22	33.482	+ 0.8072	+118	14	45.20	8.217
* δ Mensæ	5.6	4	25	9.061	— 4.2112	— 80	27	45.02	+ 8.070
* *m* Persei	6.0	4	25	57.391	+ 4.2113	+ 42	50	12.78	7.980
A Draconis S. P.	5.0	4	28	11.640	— 0.1331	+111	0	9.86	7.799
α Tauri (*Aldebaran*)	1.0	4	29	50.265	+ 3.4379	+ 16	17	45.04	7.495
* τ Tauri	4.5	4	35	52.941	3.5959	+ 22	45	11.37	7.169
α Camelopardalis	4.4	4	43	30.523	+ 5.9281	+ 66	9	42.99	+ 6.568
* *i* Tauri	5.2	4	45	10.369	3.5058	+ 18	39	32.33	6.385
ι Aurigæ	2.8	4	50	5.419	3.9012	+ 32	59	52.29	6.001
* ζ Aurigæ	3.9	4	55	4.085	+ 4.1858	+ 40	55	14.51	5.600
ε Ursæ Minoris S. P.	4.5	4	56	50.316	— 6.3173	+ 97	47	19.64	5.460
11 Orionis	4.7	4	58	30.677	+ 3.4248	+ 15	15	21.83	+ 5.277
* β Eridani	2.9	5	2	38.309	2.9487	— 5	13	25.39	4.908
α Aurigæ (*Capella*)	0.1	5	8	51.491	4.4255	+ 45	53	22.76	4.003
β Orionis (*Rigel*)	0.3	5	9	26.603	2.8815	— 8	19	27.96	4.382
* τ Orionis	3.8	5	12	27.558	+ 2.9128	— 6	57	33.92	+ 4.118

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1894.0. (January 0d.0—0d.351, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
β Tauri	1.8	5 19 35.454	+ 3.7897	+ 28 31 2.87	+ 3.337
Groombridge 966	6.4	5 25 33.566	8.0039	+ 74 58 21.89	3.022
* χ Aurigæ	5.0	5 25 49.799	3.9053	+ 32 6 48.76	3.000
δ Orionis (*var.*)	2.3	5 26 35.463	3.0636	− 0 22 40.66	2.908
* Groombridge 944	6.4	5 28 3.017	18.6798	+ 85 8 33.95	2.800
α Leporis	2.7	5 28 3.297	+ 2.6449	− 17 53 54.45	+ 2.785
ε Orionis	1.8	5 30 50.063	3.0425	− 1 16 11.78	2.546
α Columbæ	2.7	5 35 48.703	+ 2.1729	− 34 7 51.37	2.067
ω Draconis S. P.	4.9	5 37 34.388	− 0.3533	+111 11 35.24	1.635
* κ Orionis	2.3	5 42 43.720	+ 2.8450	− 9 42 27.37	1.513
ψ^1 Draconis S. P.	4.8	5 43 49.363	− 1.0782	+107 47 57.53	+ 1.687
* ν Aurigæ	4.1	5 44 8.536	+ 4.1546	+ 39 7 1.22	1.423
* δ Doradus	4.4	5 44 35.174	0.1051	− 65 46 30.90	1.327
α Orionis (*var.*)	0.9	5 49 25.973	3.2471	+ 7 23 12.89	0.931
* β Aurigæ	2.0	5 51 45.218	4.4019	+ 44 56 9.87	0.711
* θ Aurigæ	2.9	5 52 29.624	+ 4.0921	+ 37 12 16.97	+ 0.568
ν Orionis	4.5	6 1 31.253	+ 3.4274	+ 14 46 50.53	− 0.164
δ Ursæ Minoris S. P.	4.4	6 6 29.755	− 19.4760	+ 93 23 15.54	0.620
22 Camelopardalis (H.)	4.7	6 7 9.672	+ 6.6169	+ 69 21 22.67	0.744
* η Geminorum	3.5	6 8 28.790	3.6228	+ 22 32 13.75	0.758
μ Geminorum	3.2	6 16 32.900	+ 3.6314	+ 22 34 3.07	− 1.568
* ψ^1 Aurigæ	5.1	6 16 44.122	4.6263	+ 49 20 29.26	1.474
α Argûs (*Canopus*)	−0.8	6 21 36.008	1.3305	− 52 38 16.17	1.878
* ν Geminorum	4.2	6 22 40.142	+ 3.5630	+ 20 16 43.67	2.002
* χ Draconis S. P.	5.3	6 22 58.016	− 1.0800	+107 18 48.00	1.631
γ Geminorum	2.0	6 31 35.311	+ 3.4672	+ 16 29 21.74	− 2.803
* ε Geminorum	3.2	6 37 24.620	3.6932	+ 25 14 8.53	3.273
* ψ^5 Aurigæ	5.4	6 39 5.892	4.3285	+ 43 40 56.76	3.257
† α Canis Majoris (*Sirius*)	−1.4	6 40 28.632	2.6436	− 16 34 15.61	4.730
* θ Geminorum	3.7	6 45 48.213	+ 3.9602	+ 34 5 19.55	4.013
* ζ Mensæ	5.6	6 48 51.936	− 4.9093	− 80 42 6.13	− 4.162
50 Draconis S. P.	5.6	6 49 47.420	− 1.9105	+104 41 28.30	4.397
51 Cephei (H.)	5.3	6 50 44.661	+ 29.7915	+ 87 12 47.65	4.442
ε Canis Majoris	1.5	6 54 27.620	2.3578	− 28 49 41.46	4.733
* ζ Geminorum (*var.*)	4.0	6 57 49.372	3.5622	+ 20 43 31.15	5.024
δ Canis Majoris	1.9	7 4 4.870	+ 2.4385	− 26 13 30.16	− 5.524
*63 Aurigæ	5.2	7 4 21.908	4.1359	+ 39 29 35.52	5.539
*25 Camelopardalis	5.3	7 8 46.437	+ 12.9364	+ 82 36 52.74	5.960
* γ^2 Volantis (*var.*)	3.9	7 9 38.611	− 0.4951	− 70 19 37.88	6.001
δ Draconis S. P.	3.1	7 12 31.855	+ 0.0285	+112 31 29.75	6.326
δ Geminorum	3.5	7 13 47.571	+ 3.5876	+ 22 10 37.62	− 6.361
τ Draconis S. P.	4.5	7 17 35.547	− 1.1196	+106 50 29.06	6.768
Piazzi vii, 67	5.7	7 19 51.175	+ 6.2948	+ 68 40 53.86	6.884
* β Canis Minoris	3.1	7 21 24.193	3.2595	+ 8 30 9.07	7.011
α^2 Geminorum (*Castor*)	1.9	7 27 50.284	+ 3.8378	+ 32 7 14.88	7.576
λ Ursæ Minoris S. P.	6.5	7 29 12.741	− 66.1695	+ 91 1 28.26	− 7.619
† α Canis Min. (*Procyon*)	0.5	7 33 45.195	+ 3.1432	+ 5 29 46.74	9.012
β Geminorum (*Pollux*)	1.2	7 38 49.812	3.6786	+ 28 16 54.73	8.438
*26 Lyncis	5.8	7 46 59.648	4.3867	+ 47 50 19.85	9.045
φ Geminorum	5.0	7 47 0.642	+ 3.6794	+ 27 2 23.62	− 9.051

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

† Periodic corrections given in the Appendix are still to be applied to the positions of Sirius and Procyon.

MEAN PLACES FOR 1894.0. (January $0^d.0-0^d.351$, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
* Groombridge 1374 .		5.6	7 47 30.120	+ 7.2775	+ 74 12 1.44	− 9.099
ϵ Draconis . .	S. P.	3.9	7 48 31.734	− 0.1812	+110 0 7.30	9.172
* ω^1 Cancri . .	.	6.0	7 54 31.099	+ 3.6367	+ 25 40 58.03	9.604
3 Ursæ Majoris (H.)	.	5.5	8 2 16.016	6.0435	+ 68 47 7.85	10.196
15 Argûs (ρ) . .	.	3.1	8 3 1.787	2.5545	− 23 59 56.12	10.209
* ζ^1 Cancri . .	.	4.8	8 6 7.982	+ 3.4460	+ 17 57 59.68	− 10.623
* β Cancri . .	.	3.8	8 10 46.014	+ 3.2582	+ 9 30 42.61	10.874
κ Cephei (*pr.*) .	S. P.	4.4	8 12 27.248	− 1.9307	+102 36 28.46	10.983
* 30 Monocerotis .	.	3.9	8 20 21.822	+ 2.9999	− 3 33 38.79	11.522
* θ Chamæleontis .	.	4.6	8 23 48.760	− 1.7178	− 77 8 32.51	11.751
η Cancri . .	.	5.4	8 26 34.806	+ 3.4777	+ 20 48 3.41	− 12.022
Groombr. 3241 .	S. P.	6.5	8 30 27.774	− 0.2230	+107 49 38.78	12.220
* σ Hydræ . .	.	4.5	8 33 13.170	+ 3.1456	+ 3 42 47.83	12.450
* γ Cancri . .	.	4.9	8 37 9.152	3.4798	+ 21 50 57.80	12.741
ϵ Hydræ . .	.	3.5	8 41 9.795	3.1815	+ 6 48 26.82	13.021
* σ^2 Cancri (*mean*) .	.	5.5	8 47 46.672	+ 3.6725	+ 30 58 50.04	− 13.425
ι Ursæ Majoris .	.	3.3	8 51 56.995	+ 4.1313	+ 48 27 27.09	13.924
12 Year Cat. 1879	S. P.	5.3	8 52 23.422	− 2.5634	+ 99 50 43.45	13.670
σ^2 Ursæ Majoris .	.	5.0	9 1 3.918	+ 5.3488	+ 67 33 52.60	14.300
κ Cancri . .	.	5.1	9 2 0.413	3.2554	+ 11 5 40.68	14.306
* θ Hydræ . .	.	4.0	9 8 51.013	+ 3.1259	+ 2 45 40.30	− 15.032
* β Argûs . .	.	2.0	9 12 2.120	0.6761	− 69 16 50.06	14.808
ι Argûs . .	.	2.6	9 14 14.979	1.6010	− 58 49 48.60	15.004
* α Lyncis . .	.	3.3	9 14 35.823	3.6680	+ 34 50 25.33	15.042
α Cephei . .	S. P.	2.6	9 16 3.002	1.4363	+117 51 48.84	15.181
1 Draconis (H.) .	.	4.5	9 21 57.683	+ 8.9635	+ 81 47 40.04	− 15.490
α Hydræ . .	.	2.1	9 22 22.721	2.9490	− 8 11 57.64	15.464
d Ursæ Majoris .	.	4.8	9 25 6.310	5.3932	+ 70 17 45.02	15.584
θ Ursæ Majoris .	.	3.2	9 25 45.956	4.0386	+ 52 9 36.42	16.235
β Cephei (*pr.*) .	S. P.	3.4	9 27 17.478	0.7925	+109 54 16.89	15.759
* 10 Leonis Minoris .	.	4.7	9 27 43.845	+ 3.6928	+ 36 52 4.86	− 15.798
* o Leonis . .	.	3.8	9 35 29.610	+ 3.2065	+ 10 22 27.68	16.235
* ζ Chamæleontis .	.	5.2	9 37 0.097	− 1.5756	− 80 27 54.11	16.280
ϵ Leonis . .	.	3.2	9 39 50.090	+ 3.4143	+ 24 15 43.56	16.439
11 Cephei . .	S. P.	4.8	9 40 22.234	0.8998	+109 10 35.79	16.542
μ Leonis . .	.	4.0	9 46 44.127	+ 3.4213	+ 26 30 21.72	− 16.908
* 19 Leonis Minoris .	.	5.2	9 51 11.582	3.6937	+ 41 33 36.98	16.975
79 Draconis . .	S. P.	6.6	9 51 32.548	0.7270	+106 47 56.89	17.016
* π Leonis . .	.	5.0	9 54 36.725	3.1739	+ 8 33 9.45	17.148
α Leonis (*Regulus*)	.	1.3	10 2 43.630	3.2001	+ 12 29 6.44	17.485
32 Ursæ Majoris .	.	5.7	10 10 20.117	+ 4.4155	+ 65 38 12.43	− 17.825
* λ Ursæ Majoris .	.	3.6	10 10 42.236	3.6378	+ 43 26 35.65	17.684
γ^1 Leonis . .	.	2.5	10 14 7.728	3.3142	+ 20 22 39.40	18.096
* μ Hydræ . .	.	4.1	10 20 57.874	2.9009	− 16 17 44.26	18.319
* β Leonis Minoris .	.	4.3	10 21 45.263	3.4853	+ 37 15 1.11	18.325
* α Antliæ . .	.	4.5	10 22 18.034	+ 2.7395	− 30 31 42.70	− 18.225
9 Draconis (H.) .	.	5.0	10 26 5.288	5.2503	+ 76 15 31.50	18.409
ρ Leonis . .	.	4.0	10 27 13.840	3.1638	+ 9 51 6.81	18.441
226 Cephei (B.) .	S. P.	5.7	10 30 24.842	1.0759	+104 19 11.52	18.531
* β Octantis . .	S. P.	4.4	10 35 12.357	+ 6.4550	− 98 3 47.44	− 18.697

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MEAN PLACES FOR 1894.0. (January 0d.0—0d.351, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
* 41 Leonis Minoris	5.1	10	37	39.165	+ 3.2700	+ 23	44	35.73	− 18.746
η Argûs (*var.*)	1–6	10	40	56.846	2.3145	− 59	7	38.20	18.875
l Leonis	5.3	10	43	41.178	3.1582	+ 11	6	21.52	18.979
* δ^2 Chamæleontis	4.7	10	44	47.430	0.6335	− 79	58	52.95	18.983
ι Cephei S. P.	3.6	10	45	54.291	2.1229	+114	21	25.84	18.881
* 46 Leonis Minoris	3.9	10	47	23.035	+ 3.3684	+ 34	47	11.29	− 19.302
* Groombridge 1706	6.3	10	51	28.190	4.9554	+ 78	20	16.72	19.191
α Ursæ Majoris	2.0	10	57	11.122	+ 3.7438	+ 62	19	23.52	19.370
* η Octantis	6.1	11	0	4.046	− 0.2281	− 84	1	25.28	19.371
* p^3 Leonis	6.2	11	1	29.699	+ 3.0596	+ 2	31	51.07	19.489
* ψ Ursæ Majoris	3.2	11	3	42.242	+ 3.3917	+ 45	4	23.58	− 19.510
δ Leonis	2.7	11	8	28.292	3.1977	+ 21	6	15.66	19.691
* ν Ursæ Majoris	3.7	11	12	45.382	3.2566	+ 33	40	21.77	19.578
δ Crateris	3.9	11	14	2.480	2.9967	− 14	12	18.46	19.468
ο Cephei S. P.	5.1	11	14	16.447	2.4459	+112	28	6.09	19.673
τ Leonis	5.1	11	22	29.158	+ 3.0860	+ 3	26	23.76	− 19.806
λ Draconis	4.0	11	25	6.472	3.6164	+ 69	54	57.78	19.841
* ξ Hydræ	3.8	11	27	47.255	2.9437	− 31	16	16.50	19.888
υ Leonis	4.4	11	31	31.288	3.0713	− 0	14	19.04	19.863
γ Cephei S. P.	3.5	11	34	59.634	2.4188	+102	57	33.72	20.077
* χ Ursæ Majoris	3.9	11	40	27.235	+ 3.1888	+ 48	22	1.41	− 19.964
β Leonis	2.2	11	43	39.186	3.0636	+ 15	9	52.37	20.121
γ Ursæ Majoris	2.4	11	48	15.386	3.1798	+ 54	17	2.35	20.028
Groombr. 4163 S. P.	7.0	11	49	40.680	2.8693	+106	10	46.54	20.023
* π Virginis	4.6	11	55	26.430	3.0740	+ 7	12	18.74	20.087
ο Virginis	4.3	11	59	48.570	+ 3.0574	+ 9	19	18.07	− 20.015
* ε Corvi	3.2	12	4	40.366	3.0836	− 22	1	48.76	20.049
4 Draconis (H.)	5.1	12	7	14.322	2.8804	+ 78	12	18.89	20.021
γ Corvi	2.7	12	10	21.286	3.0801	− 16	57	12.27	20.016
* 2 Canum Venaticorum	6.0	12	10	48.910	3.0210	+ 41	15	1.19	20.064
β Chamæleontis	4.5	12	12	7.899	+ 3.4085	− 78	43	24.38	− 20.001
* 6 Ursæ Minoris	6.2	12	14	21.114	0.2010	+ 88	17	15.67	19.940
η Virginis	4.0	12	14	28.975	3.0687	− 0	4	40.08	20.040
α^1 Crucis	0.9	12	20	42.210	3.2980	− 62	30	41.73	20.012
* δ^2 Corvi	3.1	12	24	22.901	3.1031	− 15	55	30.34	20.082
* β Canum Venaticorum	4.4	12	28	42.553	+ 2.8587	+ 41	56	0.23	− 19.613
β Corvi	2.8	12	28	49.116	3.1424	− 22	48	38.11	19.960
κ Draconis	3.8	12	28	57.587	2.5894	+ 70	22	20.89	19.887
* γ Virginis (*mean*)	2.9	12	36	17.364	3.0385	− 0	52	5.64	19.809
21 Cassiopeæ S. P.	5.7	12	38	38.668	3.8650	+105	35	28.93	19.743
* 31 Comæ Berenices	5.1	12	46	32.245	+ 2.9298	+ 28	7	2.64	− 19.657
32^2 Camelopardalis (H.)	5.2	12	48	21.051	0.4024	+ 83	59	20.38	19.595
* γ Cassiopeæ S. P.	2.3	12	50	18.603	3.5822	+119	51	26.80	19.558
α Canum Venaticorum	3.2	12	51	4.221	2.8148	+ 38	53	26.88	19.508
* 43 Cephei (H.) S. P.	4.6	12	54	17.279	7.2978	+ 94	18	41.99	19.493
* δ Muscæ	3.8	12	54	59.751	+ 4.1806	− 70	58	36.01	− 19.469
* ε Virginis	3.1	12	56	54.055	2.9879	+ 11	31	43.96	19.412
θ Virginis	4.6	13	4	27.655	3.1015	− 4	58	23.15	19.306
* 20 Canum Venaticorum	4.7	13	12	47.384	2.6962	+ 41	7	50.37	19.030
α Virginis (*Spica*)	1.1	13	19	36.482	+ 3.1542	− 10	36	28.94	− 18.893

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MEAN PLACES FOR 1894.0. (January 0ᵈ.0—0ᵈ.351, Washington.)

Name of Star.	Magnitude.	Right Ascension.			Annual Variation.	Declination.			Annual Variation.
		h	m	s	s	°	′	″	″
α Urs. Min. (*Polaris*) S. P.	2.2	13	20	5.913	+ 24.0665	+ 91	15	26.15	— 18.840
38 Cassiopeæ . . S. P.	5.9	13	23	20.454	4.3844	+110	16	52.04	18.666
* κ Octantis . . .	5.4	13	23	50.766	8.8145	— 85	14	32.56	18.728
ζ Virginis . . .	3.6	13	29	17.488	3.0534	— 0	3	13.97	18.510
* B. A. C. 4536 . .	5.0	13	30	3.797	2.6819	+ 37	43	31.66	18.532
* m Virginis . . .	5.4	13	36	2.891	+ 3.1437	— 8	10	4.70	— 18.277
η Ursæ Majoris . .	1.9	13	43	21.895	2.3708	+ 49	50	32.15	18.072
η Bootis . . .	2.8	13	49	38.265	2.8568	+ 18	55	44.98	18.162
50 Cassiopeæ . . S. P.	4.1	13	54	22.906	5.0197	+108	5	30.55	17.630
* θ Apodis . . .	Var.	13	55	0.565	5.6880	— 76	17	3.83	17.574
β Centauri . . .	0.7	13	56	20.371	+ 4.1815	— 59	51	41.65	— 17.577
* π Hydræ . . .	3.6	14	0	20.015	3.4019	— 26	10	14.80	17.353
α Draconis . . .	3.7	14	1	31.225	1.6240	+ 64	52	56.53	17.294
* d Bootis . . .	4.8	14	5	33.929	2.7386	+ 25	35	37.72	17.191
* κ Virginis . . .	4.2	14	7	14.464	+ 3.1944	— 9	46	48.99	16.914
* 4 Ursæ Minoris . .	4.9	14	9	15.747	— 0.3157	+ 78	2	44.43	— 16.905
* δ Octantis . . .	5.0	14	9	57.358	+ 9.0234	— 83	10	53.80	16.924
α Bootis (*Arcturus*) .	0.2	14	10	49.594	2.7351	+ 19	44	3.58	18.674
* λ Bootis . . .	4.3	14	12	21.239	2.2825	+ 46	34	30.20	16.652
* λ Virginis . . .	4.7	14	13	22.420	3.2386	— 12	52	59.25	16.735
ι Cassiopeæ . . S. P.	4.6	14	20	19.613	+ 4.8683	+113	4	28.11	— 16.414
θ Bootis . . .	4.1	14	21	35.361	2.0441	+ 52	20	26.47	16.754
ρ Bootis . . .	3.6	14	27	15.775	+ 2.5876	+ 30	50	12.16	15.951
5 Ursæ Minoris . .	4.5	14	27	45.050	— 0.1848	+ 76	10	1.80	16.012
α Centauri (*mean*). .	-0.1	14	32	24.015	+ 4.0378	— 60	23	51.61	15.041
* μ Hydri . . S. P.	5.3	14	33	54.826	— 1.4235	—100	25	42.49	— 15.687
* α Apodis . . .	4.1	14	34	42.498	+ 7.2135	— 78	35	39.95	15.656
* 33 Bootis . . .	5.3	14	34	53.545	2.2342	+ 44	51	42.60	15.702
ε Bootis . . .	2.6	14	40	21.528	2.6213	+ 27	31	16.10	15.331
α^2 Libræ . . .	2.9	14	45	0.802	+ 3.3102	— 15	36	4.18	15.154
β Ursæ Minoris . .	2.2	14	51	0.912	— 0.2264	+ 74	35	19.17	— 14.720
* 47 Cephei (H.) . S. P.	5.7	14	51	59.763	+ 7.7426	+101	0	3.10	14.661
* γ Scorpii . . .	3.4	14	57	51.910	3.5003	— 24	51	54.59	14.363
β Bootis . . .	3.7	14	57	57.218	2.2601	+ 40	48	31.18	14.351
48 Cephei (H.) . S. P.	5.5	15	6	52.362	7.4231	+102	39	19.17	13.695
* δ Bootis . . .	3.5	15	11	13.810	+ 2.4209	+ 33	42	37.90	— 13.572
β Libræ . . .	2.9	15	11	18.142	3.2223	— 8	59	30.01	13.494
* ρ Octantis . . .	5.7	15	18	52.928	13.0413	— 84	6	38.89	12.921
μ^1 Bootis . . .	4.5	15	20	29.183	+ 2.2663	+ 37	44	56.65	12.769
γ^2 Ursæ Minoris . .	3.2	15	20	53.884	— 0.1302	+ 72	12	40.22	12.812
* β Coronæ Borealis .	3.9	15	23	27.558	+ 2.4752	+ 29	28	15.78	— 12.582
α Coronæ Borealis .	2.3	15	30	12.012	2.5394	+ 27	4	17.45	12.293
α Serpentis . . .	2.7	15	39	2.794	2.9520	+ 6	45	33.05	11.535
* γ Camelop. (H.) . S. P.	4.6	15	39	10.091	6.2457	+108	59	41.87	11.511
ε Serpentis . . .	3.7	15	45	31.918	+ 2.9874	+ 4	47	49.32	11.034
ζ Ursæ Minoris . .	4.6	15	47	50.956	— 2.2423	+ 78	7	13.52	— 10.933
ε Coronæ Borealis .	4.1	15	53	12.008	+ 2.4834	+ 27	11	5.82	10.599
δ Scorpii . . .	2.6	15	54	3.919	3.5394	— 22	19	11.11	10.509
β^1 Scorpii . . .	2.9	15	59	16.396	3.4814	— 19	30	54.43	10.120
* δ^1 Apodis . . .	4.9	16	4	30.865	+ 8.7898	— 78	25	39.46	— 9.683

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MEAN PLACES FOR 1894.0. (January $0^d.0-0^d.351$, Washington.)

Name of Star.	Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
		h m s	s	° ′ ″	″
* φ Herculis . . .	4.2	16 5 25.559	+ 1.8815	+ 45 12 46.45	− 9.571
Groombridge 2320 .	5.5	16 6 1.746	0.1416	+ 68 5 22.15	9.497
δ Ophiuchi . . .	2.8	16 8 47.422	3.1400	− 3 25 16.15	9.496
* σ Coronæ Borealis (*mean*)	5.3	16 10 42.472	2.2449	+ 34 7 39.14	9.244
τ Herculis . . .	3.9	16 16 33.293	1.8013	+ 46 33 56.60	8.725
* γ Apodis . . .	4.0	16 17 12.503	+ 9.0786	− 78 39 30.04	− 8.696
* η Ursæ Minoris . .	5.0	16 20 36.219	− 1.8112	+ 75 59 58.30	8.173
η Draconis . . .	2.8	16 22 33.482	+ 0.8072	+ 61 45 14.80	8.217
α Scorpii (*Antares*) .	1.2	16 22 54.449	3.6709	− 26 11 47.39	8.281
β Herculis . . .	2.8	16 25 39.786	+ 2.5776	+ 21 43 14.80	8.041
A Draconis . . .	5.0	16 28 11.640	− 0.1331	+ 68 59 50.14	− 7.799
ζ Ophiuchi . . .	2.8	16 31 19.300	+ 3.2995	− 10 21 7.73	7.545
α Trianguli Australis .	2.2	16 37 26.600	6.3077	− 68 49 56.21	7.118
η Herculis . . .	3.7	16 39 15.680	2.0540	+ 39 7 26.21	7.009
α Camelopardalis . S. P.	4.4	16 43 30.523	5.9281	+113 50 17.01	6.568
κ Ophiuchi . . .	3.4	16 52 39.055	+ 2.8377	+ 9 32 24.26	− 5.814
ε Ursæ Minoris . .	4.5	16 56 50.316	− 6.3173	+ 82 12 40.36	5.460
d Herculis . . .	5.3	16 57 41.530	+ 2.2114	+ 33 43 18.91	5.383
* η Ophiuchi . . .	2.5	17 4 17.884	3.4358	− 15 35 36.40	4.748
α^1 Herculis (*var.*) . .	3.1	17 9 48.839	2.7337	+ 14 30 40.80	4.329
* π Herculis . . .	3.4	17 11 21.330	+ 2.0893	+ 36 55 43.39	− 4.216
* θ Ophiuchi . . .	3.3	17 15 29.940	3.6797	− 24 53 36.74	3.922
b Ophiuchi (*var.*) . .	4.4	17 19 53.778	3.6594	− 24 4 38.82	3.622
* δ Aræ	3.8	17 21 31.902	5.4028	− 60 35 42.43	3.491
Groombr. 966 . S. P.	6.4	17 25 33.566	8.0039	+105 1 38.11	3.022
β Draconis . . .	3.0	17 28 2.285	+ 1.3536	+ 52 22 47.24	− 2.788
* Groombr. 944 . S. P.	6.4	17 28 3.017	18.6798	+ 94 51 26.05	2.800
α Ophiuchi . . .	2.2	17 30 0.831	2.7830	+ 12 38 14.50	2.853
* ι Herculis . . .	4.0	17 36 28.486	+ 1.6968	+ 46 3 45.94	2.056
ω Draconis . . .	4.9	17 37 34.388	− 0.3533	+ 68 48 24.76	1.635
μ Herculis . . .	3.5	17 42 18.624	+ 2.3466	+ 27 46 57.75	− 2.306
ψ^1 Draconis . . .	4.8	17 43 49.363	− 1.0782	+ 72 12 2.47	1.687
* θ Herculis . . .	3.9	17 52 37.030	+ 2.0552	+ 37 15 52.92	0.627
γ Draconis . . .	2.5	17 54 8.680	1.3917	+ 51 30 4.78	0.542
γ^2 Sagittarii . . .	2.9	17 58 59.893	3.8516	− 30 25 30.36	− 0.306
* ο Herculis . . .	3.9	18 3 24.464	+ 2.3395	+ 28 44 52.76	+ 0.301
δ Ursæ Minoris . .	4.4	18 6 29.755	− 19.4760	+ 86 36 44.46	0.620
22 Camelop. (H.) . S. P.	4.7	18 7 9.672	+ 6.6169	+110 38 37.33	0.744
μ^1 Sagittarii . . .	4.1	18 7 25.444	3.5866	− 21 5 10.43	0.637
η Serpentis . . .	3.5	18 15 49.485	3.1024	− 2 55 32.85	0.708
* λ Sagittarii . . .	2.9	18 21 25.729	+ 3.7025	− 25 28 48.68	+ 1.649
* χ Draconis . . .	5.3	18 22 58.016	− 1.0800	+ 72 41 12.00	1.631
ι Aquilæ . . .	4.0	18 29 26.330	+ 3.2645	− 8 19 4.92	2.239
ζ Pavonis . . .	4.2	18 30 38.793	7.0274	− 71 31 3.33	2.533
α Lyræ (*Vega*) . .	0.2	18 33 20.990	2.0314	+ 38 41 6.06	3.180
β Lyræ (*var.*) . .	3.6	18 46 9.994	+ 2.2143	+ 33 14 22.54	+ 3.994
σ Sagittarii . . .	2.3	18 48 41.555	3.7214	− 26 25 41.11	4.151
σ Octantis . . .	5.6	18 49 24.458	+104.7030	− 89 15 45.27	4.272
50 Draconis . . .	5.6	18 49 47.420	− 1.9105	+ 75 18 31.70	4.397
51 Cephei (H.) . S. P.	5.3	18 50 44.661	+ 29.7915	+ 92 47 12.35	+ 4.442

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1894.0. (January 0d.0—0d.351, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
* γ Lyræ		3.3	18 54 58.723	+ 2.2444	+ 32 32 39.53	+ 4.775
ζ Aquilæ . . .		3.1	19 0 32.293	2.7569	+ 13 42 21.82	5.132
* ι Lyræ		5.2	19 3 31.190	2.1412	+ 35 56 2.91	5.496
* 25 Camelopardalis .	S. P.	5.3	19 8 46.437	12.9364	+ 97 23 7.26	5.960
d Sagittarii . . .		5.0	19 11 25.974	3.5120	− 19 8 28.47	6.131
δ Draconis . . .		3.1	19 12 31.855	+ 0.0285	+ 67 28 30.25	+ 6.326
* θ Lyræ		4.4	19 12 41.266	+ 2.0790	+ 37 56 41.72	6.255
τ Draconis . . .		4.5	19 17 35.547	− 1.1196	+ 73 9 30.94	6.768
Piazzi vii, 67 .	S. P.	5.7	19 19 51.175	+ 6.2948	+111 19 6.14	6.884
δ Aquilæ . . .		3.5	19 20 9.229	3.0251	+ 2 54 13.06	6.948
* β Cygni . . .		3.1	19 26 26.801	+ 2.4194	+ 27 44 13.67	+ 7.378
λ Ursæ Minoris . .		6.5	19 29 12.741	−66.1695	+ 88 58 31.74	7.619
κ Aquilæ . . .		5.0	19 31 11.319	+ 3.2287	− 7 15 46.22	7.770
* β Sagittæ . . .		4.5	19 36 17.298	2.6955	+ 17 13 49.68	8.151
γ Aquilæ . . .		2.8	19 41 13.219	2.8522	+ 10 21 18.32	8.563
* δ Cygni . . .		2.9	19 41 39.753	+ 1.8761	+ 44 52 19.28	+ 8.642
α Aquilæ (*Altair*) . .		0.9	19 45 36.697	2.9275	+ 8 35 18.53	9.288
* Groombr. 1374 .	S. P.	5.6	19 47 30.120	7.2775	+105 47 58.56	9.099
* ε Pavonis . . .		4.1	19 48 19.341	+ 7.0121	− 73 11 19.74	9.129
ε Draconis . . .		3.9	19 48 31.734	− 0.1812	+ 69 59 52.70	9.172
β Aquilæ . . .		3.9	19 50 6.390	+ 2.9470	+ 6 8 31.53	+ 8.777
* γ Sagittæ . . .		3.6	19 54 2.594	2.6678	+ 19 12 16.09	9.610
* c Sagittarii . . .		4.5	19 56 8.446	3.6962	− 28 0 14.90	9.749
τ Aquilæ . . .		5.7	19 58 57.762	2.9330	+ 6 58 44.05	9.955
3 Ursæ Majoris (H.)	S. P.	5.5	20 2 16.016	6.0435	+111 12 52.15	10.196
* θ Aquilæ . . .		3.3	20 5 50.109	+ 3.0970	− 1 8 8.84	+ 10.474
* 31 Cygni . . .		3.9	20 10 17.643	1.8894	+ 46 25 11.51	10.799
α^2 Capricorni . . .		3.7	20 12 10.410	+ 3.3317	− 12 52 23.41	10.934
κ Cephei (*pr.*) . .		4.4	20 12 27.248	− 1.9307	+ 77 23 31.54	10.983
α Pavonis . . .		2.1	20 17 16.111	+ 4.7814	− 57 4 27.09	11.215
γ Cygni . . .		2.3	20 18 25.552	+ 2.1538	+ 39 55 2.61	+ 11.382
π Capricorni . . .		5.1	20 21 15.269	3.4391	− 18 33 32.48	11.574
ε Delphini . . .		4.0	20 28 8.960	+ 2.8671	+ 10 56 35.64	12.056
Groombridge 3241 .		6.5	20 30 27.774	− 0.2230	+ 72 10 21.22	12.220
* α Delphini . . .		3.9	20 34 42.877	+ 2.7878	+ 15 32 17.46	12.535
* β Pavonis . . .		3.4	20 35 24.336	+ 5.4688	− 66 35 0.51	+ 12.557
α Cygni . . .		1.4	20 37 49.117	2.0445	+ 44 54 5.51	12.734
* ψ Capricorni . . .		4.3	20 39 49.187	3.5600	− 25 39 5.74	12.715
* ε Cygni . . .		2.6	20 41 55.350	2.4278	+ 33 34 23.44	13.352
μ Aquarii . . .		4.8	20 46 56.213	+ 3.2394	− 9 22 51.47	13.305
12 Year Catalogue, 1879		5.3	20 52 23.422	− 2.5634	+ 80 9 16.55	+ 13.670
ν Cygni . . .		4.1	20 53 13.271	+ 2.2343	+ 40 45 32.76	13.735
σ^2 Ursæ Majoris .	S. P.	5.0	21 1 3.918	5.3488	+112 26 7.40	14.300
61^1 Cygni . . .		5.4	21 2 8.696	2.6834	+ 38 13 41.29	17.545
ζ Cygni . . .		3.3	21 8 25.444	2.5498	+ 29 47 31.62	14.624
* τ Cygni . . .		3.8	21 10 33.604	+ 2.3936	+ 37 35 34.82	+ 15.273
α Cephei . . .		2.6	21 16 3.002	1.4363	+ 62 8 11.16	15.181
1 Pegasi . . .		4.3	21 17 11.021	2.7723	+ 19 21 3.69	15.252
* ζ Capricorni . . .		3.8	21 20 36.962	3.4337	− 22 52 13.44	15.399
1 Draconis (H.) .	S. P.	4.5	21 21 57.683	+ 8.9635	+ 98 12 19.96	+ 15.490

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

MEAN PLACES FOR 1894.0. (January 0^d.0—0^d.351, Washington.)

Name of Star.		Magnitude.	Right Ascension.	Annual Variation.	Declination.	Annual Variation.
			h m s	s	° ′ ″	″
d Ursæ Majoris	S. P.	4.8	21 25 6.310	+ 5.3932	+109 42 14.98	+ 15.584
β Aquarii		2.9	21 25 58.746	3.1614	− 6 2 14.75	15.675
β Cephei (*pr.*)		3.4	21 27 17.478	0.7925	+ 70 5 43.11	15.759
ξ Aquarii		4.8	21 32 6.583	3.1975	− 8 19 46.16	15.985
* 74 Cygni		5.0	21 32 42.018	2.4018	+ 39 56 13.88	16.062
* λ^1 Octantis		5.4	21 34 37.307	+ 9.7376	− 83 12 21.92	+ 16.073
* ζ Chamæleontis	S. P.	5.2	21 37 0.097	− 1.5756	− 99 32 5.89	16.280
ε Pegasi		2.4	21 38 58.812	+ 2.9467	+ 9 23 20.72	16.368
11 Cephei		4.8	21 40 22.234	0.8998	+ 70 49 24.21	16.542
* π^2 Cygni		4.5	21 42 52.634	2.2136	+ 48 49 8.94	16.552
μ Capricorni		5.2	21 47 31.031	+ 3.2755	− 14 3 2.43	+ 16.792
* 16 Pegasi		5.1	21 48 14.332	2.7281	+ 25 25 35.23	16.829
79 Draconis		6.6	21 51 32.548	0.7270	+ 73 12 3.11	17.016
α Aquarii		3.0	22 0 20.378	3.0825	− 0 50 5.10	17.367
α Gruis		1.9	22 1 33.110	3.8039	− 47 28 26.68	17.261
* π Pegasi		4.3	22 5 16.777	+ 2.6604	+ 32 39 29.70	+ 17.589
32 Ursæ Majoris	S. P.	5.7	22 10 20.117	4.4155	+114 21 47.57	17.825
θ Aquarii		4.4	22 11 14.427	3.1688	− 8 18 39.74	17.812
* υ Octantis		6.2	22 11 17.291	13.0200	− 86 30 20.52	17.927
* γ Aquarii		4.0	22 16 10.864	3.1006	− 1 55 17.16	18.049
π Aquarii		4.6	22 19 51.836	+ 3.0646	+ 0 50 22.42	+ 18.164
* σ Aquarii		4.9	22 25 2.228	3.1778	− 11 13 13.01	18.327
9 Draconis	S. P.	5.0	22 26 5.288	5.2503	+103 44 28.50	18.409
* α Lacertæ		3.9	22 26 55.424	2.4630	+ 49 44 14.86	18.422
η Aquarii		4.2	22 29 54.566	3.0835	− 0 39 49.65	18.466
226 Cephei (B.)		5.7	22 30 24.842	+ 1.0759	+ 75 40 48.48	+ 18.531
* 10 Lacertæ		5.0	22 34 30.283	2.6872	+ 38 29 54.94	18.676
* β Octantis		4.4	22 35 12.357	6.4550	− 81 56 12.56	18.697
ζ Pegasi		3.5	22 36 10.530	2.9910	+ 10 16 41.06	18.713
* λ Pegasi		4.1	22 41 25.499	2.8655	+ 23 0 28.33	18.881
ι Cephei		3.6	22 45 54.291	+ 2.1229	+ 65 38 34.16	+ 18.881
λ Aquarii		3.8	22 47 5.101	3.1325	− 8 8 36.78	19.081
* Groombr. 1706	S. P.	6.3	22 51 28.190	4.9554	+101 39 43.28	19.191
α Pis. Aus. (*Fomalhaut*)		1.3	22 51 47.579	3.3238	− 30 11 2.32	19.000
* ο Andromedæ		3.8	22 57 2.597	2.7507	+ 41 45 22.16	19.292
α Ursæ Majoris	S. P.	2.0	22 57 11.122	+ 3.7438	+117 40 36.48	+ 19.370
α Pegasi (*Markab*)		2.5	22 59 28.835	2.9852	+ 14 38 5.65	19.307
* φ Aquarii		4.3	23 8 49.993	3.1086	− 6 37 13.24	19.363
ο Cephei		5.1	23 14 16.447	2.4459	+ 67 31 53.91	19.673
* τ Pegasi		4.6	23 15 23.399	2.9640	+ 23 9 36.00	19.659
θ Piscium		4.3	23 22 35.446	+ 3.0413	+ 5 47 47.77	+ 19.730
λ Draconis	S. P.	4.0	23 25 6.472	3.6164	+110 5 2.22	19.841
* λ Andromedæ		3.8	23 32 22.557	2.9234	+ 45 53 0.88	19.474
ι Piscium		4.3	23 34 29.891	3.0843	+ 5 3 6.33	19.486
γ Cephei		3.5	23 34 59.634	2.4188	+ 77 2 26.28	20.077
* i^1 Aquarii		5.2	23 38 42.268	+ 3.1165	− 18 51 54.61	+ 19.961
* δ Sculptoris		4.6	23 43 24.306	3.1318	− 28 42 58.49	19.858
* γ^1 Octantis		5.2	23 45 52.091	3.6748	− 82 36 28.61	19.994
Groombridge 4163		6.6	23 49 40.680	2.8693	+ 73 49 13.46	20.023
ω Piscium		4.2	23 53 52.085	3.0786	+ 6 16 35.15	19.931
* 33 Piscium		4.7	23 59 54 595	+ 3.0708	− 6 18 1.56	+ 20.148

* Apparent right ascensions of stars marked with an asterisk are given after those of standard stars.

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Jan.	$1^{h}\ 19^{m}$	$+88^{\circ}\ 44'$	Jan.	$6^{h}\ 51^{m}$	$+87^{\circ}\ 12'$	Jan.	$18^{h}\ 6^{m}$	$+86^{\circ}\ 36'$	Jan.	$19^{h}\ 27^{m}$	$+88^{\circ}\ 58'$
	s	″		s	″		s	″		s	″
0.3	51.16	55.3	0.5	12.77	55.1	0.9	8.29	32.9	1.0	51.71	27.5
1.3	50.30	55.4	1.5	12.86	55.4	1.9	8.29	32.6	2.0	51.31	27.3
2.3	49.46	55.4	2.5	12.97	55.6	2.9	8.28	32.3	3.0	50.89	27.0
3.3	48.61	55.5	3.5	13.09	55.9	3.9	8.26	31.9	4.0	50.44	26.7
4.3	47.74	55.7	4.5	13.21	56.2	4.9	8.25	31.6	5.0	49.97	26.4
5.3	46.83	55.8	5.5	13.33	56.6	5.9	8.26	31.2	6.0	49.48	26.1
6.3	45.85	55.9	6.5	13.45	56.9	6.9	8.27	30.9	7.0	49.02	25.8
7.3	44.83	56.0	7.5	13.57	57.2	7.9	8.30	30.5	8.0	48.62	25.4
8.3	43.76	56.1	8.5	13.66	57.6	8.9	8.35	30.1	9.0	48.29	25.1
9.3	42.65	56.2	9.5	13.71	58.0	9.9	8.42	29.8	10.0	48.02	24.7
10.2	41.55	56.2	10.5	13.71	58.3	10.9	8.51	29.4	11.0	47.84	24.3
11.2	40.49	56.3	11.5	13.70	58.7	11.9	8.62	29.1	12.0	47.73	24.0
12.2	39.45	56.3	12.5	13.66	59.0	12.9	8.73	28.7	13.0	47.66	23.7
13.2	38.47	56.3	13.5	13.63	59.3	13.9	8.84	28.4	13.9	47.61	23.4
14.2	37.55	56.3	14.5	13.60	59.6	14.9	8.94	28.2	14.9	47.54	23.1
15.2	36.67	56.3	15.5	13.58	59.9	15.9	9.04	27.9	15.9	47.44	22.8
16.2	35.80	56.3	16.5	13.57	60.1	16.9	9.13	27.6	16.9	47.31	22.5
17.2	34.94	56.4	17.5	13.59	60.4	17.9	9.21	27.3	17.9	47.13	22.2
18.2	34.03	56.4	18.5	13.62	60.7	18.9	9.28	27.0	18.9	46.92	21.9
19.2	33.10	56.5	19.5	13.64	61.1	19.9	9.36	26.6	19.9	46.74	21.5
20.2	32.12	56.5	20.4	13.65	61.4	20.9	9.46	26.3	20.9	46.59	21.2
21.2	31.08	56.5	21.4	13.64	61.7	21.9	9.59	26.0	21.9	46.49	20.8
22.2	30.00	56.5	22.4	13.58	62.1	22.9	9.73	25.6	22.9	46.48	20.5
23.2	28.89	56.5	23.4	13.51	62.4	23.9	9.89	25.3	23.9	46.55	20.1
24.2	27.82	56.5	24.4	13.40	62.8	24.9	10.08	25.0	24.9	46.73	19.8
25.2	26.77	56.4	25.4	13.27	63.1	25.9	10.28	24.7	25.9	46.96	19.4
26.2	25.77	56.3	26.4	13.10	63.4	26.9	10.49	24.4	26.9	47.23	19.1
27.2	24.83	56.2	27.4	12.95	63.7	27.9	10.70	24.1	27.9	47.53	18.8
28.2	23.94	56.1	28.4	12.78	64.0	28.9	10.90	23.9	28.9	47.81	18.5
29.2	23.07	56.1	29.4	12.64	64.2	29.9	11.09	23.6	29.9	48.05	18.2
30.2	22.24	56.0	30.4	12.50	64.5	30.9	11.27	23.4	30.9	48.28	17.9
31.2	21.39	55.9	31.4	12.39	64.7	31.9	11.45	23.1	31.9	48.48	17.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Feb.	1 18	+88 44	Feb.	6 51	+87 13	Feb.	18 6	+86 36	Feb.	19 27	+88 58
	s	″		s	″		s	″		s	″
1.2	80.54	55.8	1.4	12.27	5.0	1.9	11.62	22.8	1.9	48.65	17.3
2.2	79.63	55.8	2.4	12.15	5.3	2.9	11.81	22.6	2.9	48.84	17.0
3.2	78.67	55.7	3.4	12.02	5.6	3.9	12.02	22.3	3.9	49.09	16.7
4.2	77.68	55.7	4.4	11.87	6.0	4.9	12.24	22.0	4.9	49.39	16.4
5.2	76.65	55.6	5.4	11.67	6.3	5.9	12.49	21.7	5.9	49.76	16.0
6.2	75.61	55.5	6.4	11.46	6.6	6.9	12.75	21.4	6.9	50.21	15.7
7.2	74.61	55.3	7.4	11.22	6.9	7.9	13.05	21.1	7.9	50.72	15.4
8.2	73.65	55.1	8.4	10.94	7.2	8.9	13.33	20.9	8.9	51.29	15.1
9.2	72.76	55.0	9.4	10.67	7.4	9.9	13.60	20.7	9.9	51.89	14.8
10.2	71.93	54.8	10.4	10.40	7.7	10.9	13.88	20.5	10.9	52.48	14.5
11.2	71.17	54.6	11.4	10.14	7.9	11.9	14.14	20.3	11.9	53.05	14.2
12.2	70.43	54.5	12.4	9.90	8.1	12.9	14.41	20.1	12.9	53.56	14.0
13.2	69.72	54.3	13.4	9.69	8.3	13.9	14.65	19.9	13.9	54.04	13.7
14.2	68.99	54.2	14.4	9.48	8.6	14.9	14.88	19.7	14.9	54.48	13.5
15.1	68.24	54.1	15.4	9.28	8.8	15.9	15.11	19.5	15.9	54.92	13.2
16.1	67.45	54.0	16.4	9.09	9.0	16.8	15.36	19.3	16.9	55.38	12.9
17.1	66.62	53.8	17.4	8.86	9.3	17.8	15.63	19.0	17.9	55.89	12.6
18.1	65.75	53.7	18.4	8.61	9.6	18.8	15.92	18.8	18.9	56.45	12.3
19.1	64.85	53.5	19.4	8.32	9.8	19.8	16.22	18.6	19.9	57.11	12.0
20.1	63.97	53.3	20.4	8.01	10.1	20.8	16.55	18.4	20.9	57.86	11.8
21.1	63.14	53.1	21.4	7.67	10.3	21.8	16.89	18.2	21.9	58.68	11.5
22.1	62.34	52.8	22.4	7.31	10.6	22.8	17.24	18.0	22.9	59.54	11.2
23.1	61.62	52.6	23.4	6.94	10.8	23.8	17.58	17.9	23.9	60.42	11.0
24.1	60.96	52.3	24.3	6.57	10.9	24.8	17.92	17.8	24.9	61.29	10.8
25.1	60.35	52.1	25.3	6.23	11.1	25.8	18.24	17.7	25.9	62.14	10.6
26.1	59.78	51.9	26.3	5.88	11.3	26.8	18.55	17.5	26.9	62.95	10.4
27.1	59.22	51.7	27.3	5.58	11.4	27.8	18.85	17.4	27.9	63.71	10.2
28.1	58.66	51.5	28.3	5.28	11.6	28.8	19.16	17.3	28.9	64.45	10.0
29.1	58.05	51.3	29.3	4.98	11.7	29.8	19.46	17.2	29.9	65.19	9.8

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Mar.	h m 1 18	° ′ +88 44	Mar.	h m 6 50	° ′ +87 13	Mar.	h m 18 6	° ′ +86 36	Mar.	h m 19 28	° ′ +88 58
	s	″		s	″		s	″		s	″
1.1	58.05	51.3	1.3	64.98	11.7	1.8	19.46	17.2	1.9	5.19	9.8
2.1	57.42	51.0	2.3	64.66	11.9	2.8	19.78	17.0	2.9	5.95	9.5
3.1	56.75	50.8	3.3	64.34	12.1	3.8	20.10	16.9	3.9	6.74	9.3
4.1	56.03	50.6	4.3	64.00	12.3	4.8	20.46	16.7	4.9	7.60	9.0
5.1	55.34	50.4	5.3	63.63	12.5	5.8	20.82	16.6	5.9	8.52	8.8
6.1	54.66	50.1	6.3	63.22	12.7	6.8	21.20	16.5	6.9	9.52	8.6
7.1	54.03	49.8	7.3	62.80	12.8	7.8	21.58	16.4	7.9	10.56	8.4
8.1	53.47	49.5	8.3	62.37	13.0	8.8	21.95	16.3	8.9	11.65	8.2
9.1	52.96	49.2	9.3	61.94	13.1	9.8	22.34	16.2	9.8	12.73	8.0
10.1	52.54	48.9	10.3	61.53	13.2	10.8	22.69	16.2	10.8	13.78	7.9
11.1	52.16	48.6	11.3	61.13	13.3	11.8	23.03	16.2	11.8	14.78	7.8
12.1	51.82	48.4	12.3	60.76	13.4	12.8	23.36	16.1	12.8	15.73	7.6
13.1	51.49	48.1	13.3	60.41	13.5	13.8	23.67	16.1	13.8	16.65	7.5
14.1	51.14	47.9	14.3	60.08	13.5	14.8	23.97	16.1	14.8	17.53	7.4
15.1	50.78	47.6	15.3	59.74	13.6	15.8	24.29	16.0	15.8	18.38	7.2
16.1	50.36	47.4	16.3	59.40	13.8	16.8	24.62	16.0	16.8	19.28	7.1
17.1	49.92	47.1	17.3	59.04	13.9	17.8	24.96	15.9	17.8	20.22	6.9
18.1	49.46	46.9	18.3	58.65	14.0	18.8	25.32	15.8	18.8	21.23	6.8
19.1	48.99	46.6	19.3	58.24	14.1	19.8	25.70	15.8	19.8	22.32	6.6
20.1	48.57	46.3	20.3	57.79	14.2	20.8	26.07	15.7	20.8	23.48	6.4
21.1	48.20	46.0	21.3	57.34	14.3	21.8	26.46	15.7	21.8	24.68	6.3
22.0	47.88	45.7	22.3	56.86	14.4	22.7	26.85	15.8	22.8	25.91	6.2
23.0	47.66	45.3	23.3	56.40	14.4	23.7	27.23	15.8	23.8	27.11	6.1
24.0	47.48	45.0	24.3	55.95	14.4	24.7	27.59	15.9	24.8	28.29	6.1
25.0	47.35	44.7	25.3	55.54	14.4	25.7	27.94	15.9	25.8	29.42	6.0
26.0	47.26	44.4	26.3	55.13	14.4	26.7	28.28	16.0	26.8	30.50	6.0
27.0	47.16	44.1	27.3	54.76	14.4	27.7	28.60	16.0	27.8	31.54	5.9
28.0	47.04	43.8	28.3	54.37	14.4	28.7	28.92	16.1	28.8	32.56	5.9
29.0	46.89	43.5	29.3	54.00	14.4	29.7	29.25	16.1	29.8	33.57	5.8
30.0	46.70	43.2	30.3	53.62	14.5	30.7	29.59	16.1	30.8	34.61	5.8
31.0	46.51	43.0	31.3	53.23	14.5	31.7	29.94	16.2	31.8	35.71	5.7
32.0	46.28	42.7	32.2	52.80	14.5	32.7	30.30	16.2	32.8	36.85	5.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Apr.	h m 1 18	° ′ +88 44	Apr.	h m 6 50	° ′ +87 13	Apr.	h m 18 6	° ′ +86 36	Apr.	h m 19 28	° ′ +88 58
	s	″		s	″		s	″		s	″
1.0	46.28	42.7	1.2	52.80	14.5	1.7	30.30	16.2	1.8	36.85	5.6
2.0	46.08	42.4	2.2	52.37	14.6	2.7	30.67	16.2	2.8	38.05	5.5
3.0	45.91	42.0	3.2	51.91	14.6	3.7	31.04	16.3	3.8	39.29	5.5
4.0	45.81	41.7	4.2	51.43	14.6	4.7	31.42	16.4	4.8	40.55	5.4
5.0	45.79	41.4	5.2	50.97	14.5	5.7	31.79	16.5	5.8	41.82	5.4
6.0	45.84	41.0	6.2	50.51	14.5	6.7	32.15	16.6	6.8	43.05	5.4
7.0	45.94	40.7	7.2	50.09	14.4	7.7	32.47	16.8	7.8	44.24	5.5
8.0	46.09	40.4	8.2	49.69	14.3	8.7	32.78	16.9	8.8	45.35	5.5
9.0	46.26	40.1	9.2	49.32	14.2	9.7	33.08	17.1	9.8	46.39	5.5
10.0	46.44	39.8	10.2	48.97	14.1	10.7	33.37	17.2	10.8	47.41	5.6
10.9	46.58	39.5	11.2	48.63	14.1	11.7	33.65	17.3	11.8	48.39	5.6
11.9	46.69	39.3	12.2	48.29	14.0	12.7	33.93	17.4	12.8	49.38	5.6
12.9	46.76	39.0	13.2	47.95	14.0	13.7	34.22	17.5	13.8	50.38	5.6
13.9	46.83	38.8	14.2	47.57	13.9	14.7	34.52	17.6	14.8	51.44	5.6
14.9	46.86	38.5	15.2	47.19	13.9	15.7	34.85	17.7	15.8	52.56	5.6
15.9	46.93	38.2	16.2	46.76	13.8	16.7	35.18	17.9	16.8	53.74	5.7
16.9	47.04	37.9	17.2	46.34	13.7	17.7	35.51	18.0	17.7	54.96	5.7
17.9	47.21	37.5	18.2	45.90	13.6	18.7	35.84	18.2	18.7	56.21	5.7
18.9	47.45	37.2	19.2	45.47	13.5	19.7	36.16	18.4	19.7	57.44	5.8
19.9	47.76	36.9	20.2	45.05	13.4	20.7	36.47	18.6	20.7	58.64	5.9
20.9	48.12	36.6	21.2	44.65	13.2	21.7	36.76	18.8	21.7	59.80	6.0
21.9	48.53	36.3	22.2	44.27	13.1	22.7	37.03	19.0	22.7	60.88	6.2
22.9	48.94	36.0	23.2	43.94	12.9	23.7	37.29	19.3	23.7	61.90	6.3
23.9	49.35	35.7	24.2	43.63	12.8	24.7	37.53	19.5	24.7	62.87	6.4
24.9	49.73	35.5	25.2	43.31	12.6	25.7	37.77	19.7	25.7	63.83	6.5
25.9	50.05	35.2	26.2	43.00	12.5	26.7	38.02	19.8	26.7	64.78	6.6
26.9	50.35	35.0	27.2	42.68	12.4	27.7	38.28	20.0	27.7	65.77	6.7
27.9	50.62	34.7	28.2	42.33	12.3	28.6	38.55	20.2	28.7	66.78	6.8
28.9	50.90	34.4	29.2	41.98	12.1	29.6	38.82	20.4	29.7	67.85	6.8
29.9	51.21	34.2	30.2	41.61	12.0	30.6	39.10	20.6	30.7	68.98	6.9
30.9	51.57	33.9	31.2	41.23	11.9	31.6	39.38	20.8	31.7	70.11	7.1
31.9	52.00	33.6									

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	*δ* Ursæ Minoris.		Mean Solar Date.	*λ* Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
May	h m 1 18	+88° 44′	May	h m 6 50	+87° 13′	May	h m 18 6	+86° 36′	May	h m 19 29	+88° 58′
	s	″		s	″		s	″		s	″
1.9	52.00	33.6	1.2	41.23	11.9	1.6	39.38	20.8	1.7	10.11	7.1
2.9	52.49	33.3	2.2	40.84	11.7	2.6	39.65	21.0	2.7	11.24	7.2
3.9	53.08	33.0	3.2	40.46	11.5	3.6	39.90	21.3	3.7	12.36	7.4
4.9	53.68	32.7	4.2	40.13	11.3	4.6	40.13	21.6	4.6	13.41	7.6
5.9	54.33	32.5	5.2	39.81	11.0	5.6	40.34	21.9	5.6	14.39	7.7
6.9	54.97	32.3	6.2	39.53	10.8	6.6	40.54	22.1	6.6	15.29	7.9
7.9	55.60	32.1	7.1	39.28	10.6	7.6	40.71	22.4	7.6	16.14	8.1
8.9	56.19	31.9	8.1	39.05	10.4	8.6	40.87	22.6	8.6	16.91	8.3
9.9	56.73	31.7	9.1	38.82	10.1	9.6	41.04	22.9	9.6	17.69	8.5
10.9	57.25	31.5	10.1	38.60	9.9	10.6	41.21	23.1	10.6	18.46	8.6
11.9	57.75	31.2	11.1	38.37	9.8	11.6	41.39	23.3	11.6	19.26	8.8
12.9	58.26	31.0	12.1	38.10	9.6	12.6	41.57	23.6	12.6	20.12	8.9
13.9	58.78	30.8	13.1	37.83	9.4	13.6	41.78	23.8	13.6	21.03	9.1
14.9	59.39	30.5	14.1	37.54	9.2	14.6	41.97	24.1	14.6	21.96	9.3
15.9	60.04	30.3	15.1	37.24	9.0	15.6	42.17	24.3	15.6	22.94	9.5
16.9	60.75	30.0	16.1	36.94	8.7	16.6	42.37	24.6	16.6	23.89	9.7
17.9	61.53	29.8	17.1	36.66	8.5	17.6	42.54	24.9	17.6	24.82	9.9
18.9	62.34	29.6	18.1	36.40	8.2	18.6	42.70	25.3	18.6	25.68	10.2
19.9	63.16	29.4	19.1	36.16	7.9	19.6	42.84	25.6	19.6	26.49	10.4
20.9	63.98	29.2	20.1	35.95	7.6	20.6	42.95	25.9	20.6	27.22	10.7
21.9	64.77	29.1	21.1	35.78	7.4	21.6	43.06	26.2	21.6	27.89	11.0
22.9	65.52	28.9	22.1	35.62	7.1	22.6	43.16	26.5	22.6	28.52	11.2
23.9	66.21	28.8	23.1	35.46	6.9	23.6	43.25	26.8	23.6	29.13	11.4
24.9	66.88	28.6	24.1	35.30	6.6	24.6	43.35	27.0	24.6	29.76	11.6
25.9	67.54	28.4	25.1	35.13	6.4	25.6	43.46	27.3	25.6	30.41	11.9
26.9	68.20	28.3	26.1	34.94	6.2	26.6	43.59	27.6	26.6	31.10	12.1
27.9	68.90	28.1	27.1	34.73	5.9	27.6	43.72	27.8	27.6	31.83	12.3
28.9	69.66	27.9	28.1	34.52	5.7	28.6	43.85	28.1	28.6	32.58	12.5
29.9	70.48	27.7	29.1	34.30	5.4	29.6	43.97	28.5	29.6	33.33	12.8
30.9	71.37	27.5	30.1	34.11	5.1	30.6	44.08	28.8	30.6	34.06	13.1
31.9	72.31	27.4	31.1	33.92	4.8	31.6	44.17	29.1	31.6	34.75	13.4
32.9	73.29	27.2	32.1	33.78	4.5	32.6	44.22	29.5	32.6	35.34	13.7

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North*.		Right Ascension.	Declination *North*.		Right Ascension.	Declination *North*.		Right Ascension.	Declination *North*.
June	h m 1 19	° ′ +88 44	June	h m 6 50	° ′ +87 12	June	h m 18 6	° ′ +86 36	June	h m 19 29	° ′ +88 58
	s	″		s	″		s	″		s	″
1.9	13.29	27.2	1.1	33.78	64.5	1.6	44.22	29.5	1.6	35.34	13.7
2.9	14.26	27.1	2.1	33.66	64.2	2.6	44.26	29.8	2.6	35.87	14.0
3.8	15.22	27.0	3.1	33.58	63.8	3.5	44.28	30.2	3.6	36.31	14.3
4.8	16.14	27.0	4.1	33.53	63.5	4.5	44.28	30.5	4.6	36.68	14.6
5.8	17.01	26.9	5.1	33.49	63.2	5.5	44.27	30.8	5.6	37.03	14.9
6.8	17.86	26.8	6.1	33.46	63.0	6.5	44.27	31.1	6.6	37.38	15.2
7.8	18.66	26.8	7.1	33.42	62.7	7.5	44.27	31.4	7.6	37.72	15.4
8.8	19.46	26.7	8.1	33.35	62.4	8.5	44.29	31.6	8.6	38.11	15.7
9.8	20.26	26.6	9.1	33.28	62.1	9.5	44.31	31.9	9.6	38.53	15.9
10.8	21.12	26.4	10.1	33.18	61.9	10.5	44.34	32.2	10.6	39.00	16.2
11.8	22.01	26.3	11.1	33.08	61.6	11.5	44.37	32.5	11.6	39.49	16.5
12.8	22.97	26.2	12.1	32.98	61.3	12.5	44.40	32.9	12.6	39.98	16.8
13.8	23.98	26.1	13.0	32.90	61.0	13.5	44.41	33.2	13.6	40.44	17.1
14.8	25.03	26.0	14.0	32.81	60.6	14.5	44.40	33.6	14.6	40.86	17.4
15.8	26.08	26.0	15.0	32.77	60.3	15.5	44.36	34.0	15.6	41.19	17.8
16.8	27.15	25.9	16.0	32.76	59.9	16.5	44.32	34.3	16.6	41.46	18.1
17.8	28.19	25.9	17.0	32.79	59.6	17.5	44.25	34.6	17.6	41.66	18.5
18.8	29.18	25.9	18.0	32.82	59.3	18.5	44.17	35.0	18.6	41.79	18.8
19.8	30.12	25.9	19.0	32.87	59.0	19.5	44.09	35.3	19.6	41.90	19.1
20.8	31.00	25.9	20.0	32.92	58.7	20.5	44.02	35.6	20.6	42.00	19.4
21.8	31.88	25.8	21.0	32.96	58.4	21.5	43.96	35.9	21.6	42.14	19.7
22.8	32.73	25.8	22.0	32.98	58.1	22.5	43.90	36.1	22.6	42.30	20.0
23.8	33.60	25.8	23.0	33.01	57.9	23.5	43.85	36.4	23.6	42.50	20.3
24.8	34.51	25.7	24.0	32.99	57.6	24.5	43.80	36.7	24.6	42.72	20.6
25.8	35.49	25.7	25.0	32.98	57.3	25.5	43.75	37.0	25.6	42.95	20.9
26.8	36.52	25.7	26.0	32.99	56.9	26.5	43.68	37.4	26.6	43.16	21.2
27.8	37.62	25.6	27.0	33.00	56.6	27.5	43.60	37.7	27.6	43.33	21.6
28.8	38.75	25.6	28.0	33.05	56.3	28.5	43.50	38.1	28.6	43.43	21.9
29.8	39.86	25.7	29.0	33.13	55.9	29.5	43.37	38.4	29.5	43.45	22.3
30.8	40.97	25.7	30.0	33.25	55.5	30.5	43.22	38.8	30.5	43.39	22.7
31.8	42.04	25.8	31.0	33.40	55.2	31.5	43.05	39.1	31.5	43.23	23.0

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
July	h m 1 19	+88° 44′	July	h m 6 50	+87° 12′	July	h m 18 6	+86° 36′	July	h m 19 29	+88° 58′
	s	″		s	″		s	″		s	″
1.8	42.04	25.8	1.0	33.40	55.2	1.5	43.05	39.1	1.5	43.23	23.0
2.8	43.06	25.8	2.0	33.57	54.9	2.5	42.87	39.4	2.5	43.02	23.4
3.8	44.03	25.9	3.0	33.73	54.6	3.5	42.68	39.7	3.5	42.81	23.7
4.8	44.96	26.0	3.9	33.91	54.3	4.5	42.51	40.0	4.5	42.61	24.0
5.8	45.85	26.1	4.9	34.07	54.0	5.5	42.35	40.2	5.5	42.41	24.3
6.8	46.75	26.1	5.9	34.20	53.7	6.5	42.20	40.5	6.5	42.28	24.6
7.8	47.67	26.2	6.9	34.33	53.5	7.5	42.06	40.8	7.5	42.18	24.9
8.8	48.63	26.2	7.9	34.43	53.2	8.5	41.92	41.1	8.5	42.13	25.2
9.8	49.63	26.2	8.9	34.55	52.9	9.5	41.77	41.4	9.5	42.07	25.5
10.7	50.69	26.3	9.9	34.65	52.5	10.5	41.62	41.7	10.5	41.99	25.8
11.7	51.79	26.3	10.9	34.79	52.2	11.5	41.46	42.0	11.5	41.88	26.2
12.7	52.92	26.4	11.9	34.93	51.9	12.4	41.26	42.3	12.5	41.69	26.6
13.7	54.02	26.5	12.9	35.11	51.5	13.4	41.05	42.7	13.5	41.42	27.0
14.7	55.12	26.6	13.9	35.33	51.2	14.4	40.82	43.0	14.5	41.10	27.3
15.7	56.15	26.7	14.9	35.58	50.8	15.4	40.59	43.3	15.5	40.69	27.7
16.7	57.15	26.9	15.9	35.82	50.5	16.4	40.32	43.5	16.5	40.25	28.0
17.7	58.07	27.0	16.9	36.07	50.3	17.4	40.09	43.8	17.5	39.81	28.3
18.7	58.95	27.2	17.9	36.32	50.0	18.4	39.86	44.0	18.5	39.36	28.6
19.7	59.82	27.3	18.9	36.56	49.7	19.4	39.62	44.3	19.5	38.96	28.9
20.7	60.69	27.4	19.9	36.80	49.5	20.4	39.41	44.5	20.5	38.57	29.2
21.7	61.57	27.5	20.9	36.99	49.2	21.4	39.20	44.8	21.5	38.23	29.5
22.7	62.51	27.6	21.9	37.18	48.9	22.4	39.00	45.0	22.5	37.91	29.8
23.7	63.50	27.7	22.9	37.38	48.6	23.4	38.77	45.3	23.5	37.58	30.1
24.7	64.55	27.8	23.9	37.59	48.3	24.4	38.55	45.6	24.5	37.22	30.5
25.7	65.62	28.0	24.9	37.82	48.0	25.4	38.29	45.9	25.5	36.80	30.8
26.7	66.72	28.1	25.9	38.09	47.7	26.4	38.00	46.2	26.5	36.31	31.2
27.7	67.79	28.3	26.9	38.38	47.3	27.4	37.71	46.5	27.5	35.73	31.6
28.7	68.82	28.5	27.9	38.71	47.0	28.4	37.40	46.7	28.5	35.07	31.9
29.7	69.82	28.7	28.9	39.06	46.7	29.4	37.08	47.0	29.5	34.34	32.2
30.7	70.74	29.0	29.9	39.43	46.4	30.4	36.74	47.2	30.5	33.58	32.6
31.7	71.63	29.2	30.9	39.80	46.2	31.4	36.43	47.4	31.5	32.82	32.9
32.7	72.46	29.4	31.9	40.15	46.0	32.4	36.10	47.6	32.5	32.09	33.2

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Aug.	h m 1 20	+88° 44′	Aug.	h m 6 50	+87° 12′	Aug.	h m 18 6	+86° 36′	Aug.	h m 19 29	+88° 58′
	s	″		s	″		s	″		s	″
1.7	12.46	29.4	1.9	40.49	45.7	1.4	36.10	47.6	1.5	32.09	33.2
2.7	13.27	29.6	2.9	40.81	45.5	2.4	35.82	47.8	2.4	31.39	33.4
3.7	14.09	29.8	3.9	41.10	45.2	3.4	35.51	48.0	3.4	30.73	33.7
4.7	14.93	29.9	4.9	41.39	45.0	4.4	35.24	48.2	4.4	30.12	34.0
5.7	15.83	30.1	5.9	41.67	44.7	5.4	34.95	48.5	5.4	29.53	34.3
6.7	16.78	30.3	6.9	41.98	44.4	6.4	34.66	48.7	6.4	28.94	34.6
7.7	17.76	30.5	7.9	42.29	44.2	7.4	34.35	48.9	7.4	28.31	34.9
8.7	18.77	30.7	8.9	42.65	43.9	8.4	34.03	49.2	8.4	27.63	35.2
9.7	19.78	30.9	9.9	43.02	43.6	9.4	33.68	49.5	9.4	26.87	35.6
10.7	20.75	31.2	10.9	43.43	43.3	10.4	33.33	49.7	10.4	26.04	35.9
11.7	21.69	31.4	11.9	43.85	43.0	11.4	32.96	49.9	11.4	25.16	36.2
12.7	22.56	31.7	12.9	44.27	42.8	12.4	32.59	50.1	12.4	24.22	36.6
13.7	23.38	32.0	13.9	44.70	42.6	13.4	32.21	50.3	13.4	23.26	36.8
14.7	24.14	32.2	14.9	45.12	42.4	14.4	31.84	50.4	14.4	22.30	37.1
15.6	24.85	32.5	15.9	45.51	42.2	15.4	31.49	50.6	15.4	21.40	37.4
16.6	25.57	32.7	16.9	45.89	42.0	16.3	31.14	50.7	16.4	20.51	37.6
17.6	26.28	33.0	17.9	46.25	41.8	17.3	30.81	50.9	17.4	19.66	37.8
18.6	27.03	33.2	18.9	46.60	41.6	18.3	30.47	51.0	18.4	18.84	38.1
19.6	27.84	33.4	19.9	46.97	41.3	19.3	30.15	51.2	19.4	18.02	38.3
20.6	28.68	33.7	20.9	47.34	41.1	20.3	29.81	51.4	20.4	17.20	38.6
21.6	29.56	33.9	21.9	47.75	40.9	21.3	29.46	51.6	21.4	16.33	38.9
22.6	30.45	34.2	22.9	48.19	40.6	22.3	29.07	51.8	22.4	15.39	39.2
23.6	31.35	34.5	23.9	48.66	40.3	23.3	28.66	52.0	23.4	14.38	39.5
24.6	32.21	34.8	24.8	49.14	40.1	24.3	28.25	52.2	24.4	13.28	39.8
25.6	33.01	35.1	25.8	49.66	39.9	25.3	27.82	52.3	25.4	12.12	40.1
26.6	33.76	35.5	26.8	50.16	39.7	26.3	27.39	52.4	26.4	10.92	40.4
27.6	34.43	35.8	27.8	50.66	39.6	27.3	26.96	52.6	27.4	9.69	40.6
28.6	35.06	36.1	28.8	51.15	39.4	28.3	26.53	52.7	28.4	8.50	40.8
29.6	35.67	36.5	29.8	51.61	39.3	29.3	26.13	52.7	29.4	7.33	41.0
30.6	36.26	36.8	30.8	52.05	39.1	30.3	25.73	52.8	30.4	6.22	41.2
31.6	36.85	37.1	31.8	52.47	38.9	31.3	25.36	52.9	31.4	5.16	41.4
32.6	37.51	37.3	32.8	52.91	38.8	32.3	24.97	53.0	32.4	4.12	41.6

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Sept.	h m 1 20	+88° 44′	Sept.	h m 6 50	+87° 12′	Sept.	h m 18 6	+86° 36′	Sept.	h m 19 28	+88° 58′
	s	″		s	″		s	″		s	″
1.6	37.51	37.3	1.8	52.91	38.8	1.3	24.97	53.0	1.4	64.12	41.6
2.6	38.18	37.6	2.8	53.34	38.6	2.3	24.60	53.1	2.4	63.12	41.9
3.6	38.89	37.9	3.8	53.77	38.4	3.3	24.21	53.3	3.4	62.09	42.1
4.6	39.65	38.2	4.8	54.23	38.2	4.3	23.82	53.4	4.4	61.02	42.4
5.6	40.40	38.5	5.8	54.72	38.0	5.3	23.42	53.6	5.4	59.90	42.6
6.6	41.12	38.9	6.8	55.24	37.8	6.3	22.98	53.7	6.4	58.69	42.9
7.6	41.83	39.2	7.8	55.78	37.7	7.3	22.55	53.8	7.4	57.44	43.1
8.6	42.45	39.6	8.8	56.32	37.5	8.3	22.08	53.9	8.3	56.11	43.3
9.6	43.02	40.0	9.8	56.85	37.4	9.3	21.65	53.9	9.3	54.78	43.6
10.6	43.52	40.3	10.8	57.39	37.3	10.3	21.20	54.0	10.3	53.44	43.7
11.6	43.96	40.7	11.8	57.89	37.2	11.3	20.77	54.0	11.3	52.13	43.9
12.6	44.39	41.0	12.8	58.39	37.1	12.3	20.36	54.0	12.3	50.87	44.1
13.6	44.82	41.3	13.8	58.87	37.0	13.3	19.96	54.1	13.3	49.63	44.2
14.6	45.25	41.7	14.8	59.33	36.9	14.3	19.56	54.1	14.3	48.45	44.4
15.6	45.74	42.0	15.8	59.78	36.8	15.3	19.17	54.1	15.3	47.29	44.5
16.6	46.27	42.3	16.8	60.25	36.6	16.3	18.77	54.2	16.3	46.12	44.7
17.6	46.84	42.6	17.8	60.74	36.5	17.3	18.36	54.3	17.3	44.94	44.9
18.6	47.43	43.0	18.8	61.26	36.3	18.3	17.92	54.3	18.3	43.70	45.1
19.6	48.02	43.3	19.8	61.80	36.2	19.3	17.49	54.4	19.3	42.38	45.3
20.6	48.57	43.7	20.8	62.37	36.1	20.3	17.03	54.5	20.3	41.02	45.5
21.5	49.09	44.1	21.8	62.96	36.0	21.3	16.56	54.5	21.3	39.56	45.7
22.5	49.54	44.5	22.8	63.55	35.9	22.3	16.07	54.5	22.3	38.06	45.9
23.5	49.94	44.9	23.8	64.13	35.8	23.3	15.61	54.5	23.3	36.54	46.0
24.5	50.25	45.4	24.8	64.70	35.8	24.3	15.13	54.5	24.3	35.04	46.1
25.5	50.52	45.7	25.8	65.25	35.8	25.2	14.69	54.4	25.3	33.58	46.2
26.5	50.77	46.1	26.8	65.77	35.7	26.2	14.25	54.4	26.3	32.17	46.3
27.5	51.01	46.5	27.8	66.27	35.7	27.2	13.84	54.3	27.3	30.81	46.4
28.5	51.30	46.8	28.8	66.76	35.6	28.2	13.42	54.3	28.3	29.50	46.5
29.5	51.62	47.2	29.8	67.25	35.6	29.2	13.01	54.3	29.3	28.23	46.6
30.5	51.96	47.5	30.8	67.76	35.5	30.2	12.61	54.3	30.3	26.96	46.7
31.5	52.35	47.9	31.8	68.27	35.4	31.2	12.19	54.3	31.3	25.65	46.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Oct.	h m 1 20	° ′ +88 44	Oct.	h m 6 51	° ′ +87 12	Oct.	h m 18 5	° ′ +86 36	Oct.	h m 19 27	° ′ +88 58
	s	″		s	″		s	″		s	″
1.5	52.35	47.9	1.8	8.27	35.4	1.2	72.19	54.3	1.3	85.65	46.9
2.5	52.74	48.2	2.7	8.80	35.3	2.2	71.76	54.3	2.3	84.31	47.0
3.5	53.12	48.6	3.7	9.36	35.3	3.2	71.33	54.3	3.3	82.91	47.1
4.5	53.47	49.0	4.7	9.95	35.2	4.2	70.87	54.3	4.3	81.44	47.3
5.5	53.76	49.4	5.7	10.54	35.2	5.2	70.42	54.2	5.3	79.93	47.4
6.5	53.99	49.9	6.7	11.12	35.2	6.2	69.94	54.2	6.3	78.39	47.5
7.5	54.14	50.3	7.7	11.70	35.2	7.2	69.48	54.1	7.3	76.85	47.5
8.5	54.24	50.7	8.7	12.27	35.2	8.2	69.04	54.0	8.3	75.34	47.6
9.5	54.30	51.1	9.7	12.80	35.2	9.2	68.61	53.9	9.3	73.87	47.6
10.5	54.33	51.4	10.7	13.31	35.3	10.2	68.21	53.8	10.3	72.46	47.6
11.5	54.38	51.8	11.7	13.81	35.3	11.2	67.81	53.7	11.3	71.09	47.7
12.5	54.47	52.2	12.7	14.29	35.3	12.2	67.43	53.6	12.3	69.76	47.7
13.5	54.59	52.5	13.7	14.77	35.3	13.2	67.04	53.5	13.3	68.45	47.7
14.5	54.76	52.9	14.7	15.28	35.3	14.2	66.65	53.4	14.3	67.14	47.8
15.5	54.95	53.2	15.7	15.80	35.3	15.2	66.25	53.3	15.3	65.79	47.8
16.5	55.16	53.6	16.7	16.35	35.3	16.2	65.82	53.3	16.2	64.37	47.9
17.5	55.32	54.0	17.7	16.91	35.3	17.2	65.39	53.2	17.2	62.90	48.0
18.5	55.46	54.5	18.7	17.52	35.3	18.2	64.94	53.1	18.2	61.36	48.0
19.5	55.54	54.9	19.7	18.12	35.3	19.2	64.49	53.0	19.2	59.76	48.1
20.5	55.54	55.3	20.7	18.72	35.4	20.2	64.03	52.9	20.2	58.16	48.1
21.5	55.49	55.7	21.7	19.30	35.5	21.2	63.59	52.7	21.2	56.56	48.1
22.5	55.37	56.1	22.7	19.86	35.6	22.2	63.17	52.5	22.2	55.00	48.1
23.5	55.21	56.5	23.7	20.37	35.7	23.2	62.77	52.4	23.2	53.50	48.0
24.5	55.07	56.9	24.7	20.89	35.8	24.2	62.38	52.2	24.2	52.05	48.0
25.5	54.92	57.3	25.7	21.36	35.8	25.2	62.00	52.0	25.2	50.68	47.9
26.5	54.81	57.6	26.7	21.83	35.9	26.2	61.65	51.8	26.2	49.34	47.9
27.5	54.75	58.0	27.7	22.32	36.0	27.2	61.28	51.7	27.2	48.03	47.9
28.4	54.71	58.3	28.7	22.80	36.0	28.1	60.92	51.6	28.2	46.71	47.9
29.4	54.67	58.7	29.7	23.30	36.1	29.1	60.56	51.4	29.2	45.39	47.9
30.4	54.65	59.1	30.7	23.82	36.1	30.1	60.17	51.3	30.2	43.99	47.9
31.4	54.59	59.5	31.7	24.37	36.2	31.1	59.79	51.1	31.2	42.55	47.9
32.4	54.49	59.8	32.7	24.93	36.3	32.1	59.38	51.0	32.2	41.08	47.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*) Right Ascension.	α Ursæ Minoris. (*Polaris.*) Declination *North.*	Mean Solar Date.	51 Cephei (Hev.) Right Ascension.	51 Cephei (Hev.) Declination *North.*	Mean Solar Date.	δ Ursæ Minoris. Right Ascension.	δ Ursæ Minoris. Declination *North.*	Mean Solar Date.	λ Ursæ Minoris. Right Ascension.	λ Ursæ Minoris. Declination *North.*
	h m	° ′		h m	° ′		h m	° ′		h m	° ′
Nov.	1 20	+88 44	Nov.	6 51	+87 12	Nov.	18 5	+86 36	Nov.	19 27	+88 58
	s	″		s	″		s	″		s	″
1.4	54.49	59.8	1.7	24.93	36.3	1.1	59.38	51.0	1.2	41.08	47.9
2.4	54.32	60.2	2.7	25.48	36.4	2.1	58.98	50.8	2.2	39.55	47.8
3.4	54.08	60.7	3.7	26.02	36.5	3.1	58.59	50.6	3.2	38.03	47.7
4.4	53.77	61.1	4.7	26.56	36.7	4.1	58.21	50.4	4.2	36.55	47.7
5.4	53.41	61.4	5.7	27.05	36.9	5.1	57.85	50.1	5.2	35.10	47.6
6.4	53.03	61.8	6.6	27.52	37.0	6.1	57.50	49.9	6.2	33.71	47.4
7.4	52.63	62.1	7.6	27.97	37.2	7.1	57.17	49.6	7.2	32.38	47.3
8.4	52.27	62.5	8.6	28.39	37.4	8.1	56.87	49.4	8.2	31.11	47.2
9.4	51.94	62.8	9.6	28.83	37.5	9.1	56.56	49.2	9.2	29.89	47.1
10.4	51.66	63.1	10.6	29.26	37.6	10.1	56.25	49.0	10.2	28.66	47.0
11.4	51.41	63.4	11.6	29.70	37.8	11.1	55.93	48.8	11.2	27.43	46.9
12.4	51.17	63.8	12.6	30.19	37.9	12.1	55.61	48.6	12.2	26.16	46.8
13.4	50.93	64.1	13.6	30.68	38.0	13.1	55.27	48.4	13.2	24.83	46.8
14.4	50.65	64.5	14.6	31.19	38.1	14.1	54.92	48.2	14.2	23.45	46.7
15.4	50.32	64.9	15.6	31.70	38.3	15.1	54.56	48.0	15.2	22.02	46.6
16.4	49.93	65.3	16.6	32.23	38.5	16.1	54.21	47.7	16.2	20.56	46.5
17.4	49.46	65.7	17.6	32.71	38.7	17.1	53.86	47.5	17.2	19.11	46.3
18.4	48.93	66.0	18.6	33.20	38.9	18.1	53.54	47.2	18.2	17.72	46.2
19.4	48.37	66.4	19.6	33.64	39.1	19.1	53.23	46.9	19.2	16.36	46.0
20.4	47.78	66.7	20.6	34.06	39.4	20.1	52.96	46.6	20.1	15.08	45.8
21.4	47.22	67.0	21.6	34.44	39.6	21.1	52.69	46.3	21.1	13.88	45.6
22.4	46.66	67.3	22.6	34.82	39.8	22.1	52.46	46.0	22.1	12.74	45.4
23.4	46.16	67.6	23.6	35.18	40.0	23.1	52.22	45.7	23.1	11.64	45.2
24.4	45.68	67.9	24.6	35.56	40.2	24.1	51.99	45.5	24.1	10.57	45.1
25.4	45.23	68.2	25.6	35.95	40.3	25.1	51.74	45.2	25.1	9.47	44.9
26.4	44.78	68.5	26.6	36.34	40.5	26.1	51.49	45.0	26.1	8.35	44.8
27.4	44.32	68.8	27.6	36.76	40.7	27.1	51.22	44.7	27.1	7.19	44.7
28.4	43.82	69.1	28.6	37.19	40.9	28.1	50.96	44.5	28.1	5.99	44.5
29.4	43.26	69.4	29.6	37.63	41.1	29.1	50.69	44.2	29.1	4.76	44.3
30.4	42.64	69.7	30.6	38.05	41.4	30.1	50.43	43.9	30.1	3.53	44.1
31.4	41.94	70.1	31.6	38.45	41.6	31.1	50.19	43.6	31.1	2.31	43.9

CIRCUMPOLAR STARS.

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ursæ Minoris. (*Polaris.*)		Mean Solar Date.	51 Cephei (Hev.)		Mean Solar Date.	δ Ursæ Minoris.		Mean Solar Date.	λ Ursæ Minoris.	
	Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*		Right Ascension.	Declination *North.*
Dec.	h m 1 20	° ′ +88 45	Dec.	h m 6 51	° ′ +87 12	Dec.	h m 18 5	° ′ +86 36	Dec.	h m 19 26	° ′ +88 58
	s	″		s	″		s	″		s	″
1.4	41.94	10.1	1.6	38.45	41.6	1.1	50.19	43.6	1.1	62.31	43.9
2.4	41.19	10.4	2.6	38.83	41.9	2.1	49.95	43.2	2.1	61.15	43.7
3.3	40.41	10.6	3.6	39.18	42.2	3.1	49.74	42.9	3.1	60.07	43.5
4.3	39.62	10.9	4.6	39.48	42.5	4.0	49.55	42.5	4.1	59.04	43.2
5.3	38.85	11.2	5.6	39.78	42.8	5.0	49.39	42.2	5.1	58.09	43.0
6.3	38.13	11.4	6.6	40.05	43.0	6.0	49.24	41.9	6.1	57.19	42.7
7.3	37.43	11.6	7.6	40.33	43.3	7.0	49.09	41.6	7.1	56.32	42.5
8.3	36.79	11.8	8.6	40.61	43.5	8.0	48.93	41.3	8.1	55.45	42.2
9.3	36.17	12.1	9.6	40.92	43.7	9.0	48.76	41.0	9.1	54.57	42.0
10.3	35.55	12.3	10.6	41.25	44.0	10.0	48.59	40.7	10.1	53.64	41.8
11.3	34.91	12.6	11.6	41.58	44.2	11.0	48.40	40.4	11.1	52.67	41.6
12.3	34.24	12.8	12.5	41.93	44.5	12.0	48.21	40.1	12.1	51.67	41.4
13.3	33.50	13.1	13.5	42.28	44.7	13.0	48.03	39.8	13.1	50.62	41.2
14.3	32.68	13.4	14.5	42.62	45.0	14.0	47.83	39.5	14.1	49.58	40.9
15.3	31.82	13.6	15.5	42.93	45.4	15.0	47.68	39.1	15.1	48.58	40.6
16.3	30.91	13.9	16.5	43.20	45.7	16.0	47.53	38.7	16.1	47.65	40.3
17.3	29.97	14.1	17.5	43.45	46.0	17.0	47.41	38.4	17.1	46.79	40.0
18.3	29.05	14.3	18.5	43.67	46.3	18.0	47.32	38.0	18.1	46.01	39.7
19.3	28.14	14.4	19.5	43.85	46.6	19.0	47.24	37.6	19.1	45.31	39.4
20.3	27.27	14.6	20.5	44.04	46.9	20.0	47.17	37.3	20.1	44.66	39.1
21.3	26.45	14.8	21.5	44.21	47.2	21.0	47.12	37.0	21.1	44.07	38.9
22.3	25.67	14.9	22.5	44.38	47.5	22.0	47.06	36.7	22.1	43.46	38.6
23.3	24.90	15.1	23.5	44.59	47.7	22.9	46.98	36.4	23.1	42.84	38.4
24.3	24.14	15.2	24.5	44.80	48.0	23.9	46.91	36.1	24.1	42.20	38.1
25.3	23.34	15.4	25.5	45.02	48.3	24.9	46.83	35.8	25.1	41.53	37.9
26.3	22.51	15.6	26.5	45.25	48.6	25.9	46.75	35.5	26.0	40.83	37.6
27.3	21.61	15.8	27.5	45.46	48.9	26.9	46.67	35.1	27.0	40.12	37.3
28.3	20.65	16.0	28.5	45.66	49.2	27.9	46.61	34.8	28.0	39.41	37.0
29.3	19.65	16.1	29.5	45.84	49.6	28.9	46.56	34.4	29.0	38.77	36.7
30.3	18.60	16.3	30.5	45.97	49.9	29.9	46.54	34.0	30.0	38.20	36.3
31.3	17.54	16.4	31.5	46.08	50.3	30.9	46.52	33.6	31.0	37.69	36.0
32.3	16.50	16.5	32.5	46.17	50.6	31.9	46.55	33.3	32.0	37.26	35.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Andromedæ.		*γ* Pegasi. (*Algenib.*)		*β* Hydri.		12 Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 0 2	+28° 30′	h m 0 7	+14° 35′	h m 0 20	−77° 50′	h m 0 24	− 4° 32′
	s	″	s	″	s	″	s	″
(Dec. 30.2)	53.71 −.13	25.5 −0.7	46.06 −.11	41.6 −0.7	12.39 −.91	85.7 +0.8	37.46 −.10	38.4 −0.6
Jan. 9.2	53.59 .13	24.7 1.0	45.96 .10	40.8 0.8	11.50 .86	84.6 1.4	37.36 .10	39.0 0.5
19.2	53.46 .12	23.5 1.2	45.85 .09	39.9 0.9	10.67 .79	82.9 1.9	37.27 .09	39.4 0.4
29.1	53.35 .10	22.2 1.4	45.76 .08	39.0 1.0	9.92 .70	80.7 2.5	37.17 .08	39.8 0.3
Feb. 8.1	53.26 .08	20.7 1.5	45.69 .06	38.0 1.0	9.28 .59	78.0 2.9	37.10 .07	40.0 −0.1
18.1	53.19 −.05	19.2 −1.6	45.63 −.04	37.1 −0.9	8.75 −.46	74.9 +3.3	37.04 −.05	40.0 +0.1
28.1	53.16 −.02	17.6 1.5	45.61 −.01	36.2 0.8	8.36 .32	71.4 3.6	37.00 −.02	39.8 0.3
Mar. 10.0	53.15 +.02	16.1 1.4	45.61 +.02	35.4 0.7	8.11 .17	67.7 3.8	36.99 +.01	39.5 0.5
20.0	53.20 .06	14.8 1.2	45.65 .06	34.9 0.5	8.02 −.02	63.9 3.9	37.01 .04	38.9 0.7
30.0	53.28 .11	13.6 1.0	45.73 .10	34.5 −0.2	8.08 +.14	60.0 3.9	37.07 .08	38.0 0.9
Apr. 9.0	53.42 +.16	12.8 −0.7	45.85 +.14	34.5 +0.1	8.30 +.30	56.1 +3.8	37.17 +.12	37.0 +1.2
19.0	53.60 .20	12.3 −0.4	46.01 .18	34.7 0.4	8.67 .45	52.3 3.7	37.31 .16	35.6 1.4
28.9	53.82 .24	12.1 0.0	46.21 .22	35.3 0.7	9.20 .59	48.7 3.5	37.49 .20	34.1 1.6
May 8.9	54.08 .28	12.3 +0.4	46.45 .26	36.1 1.0	9.86 .73	45.3 3.2	37.71 .24	32.3 1.8
18.9	54.38 .31	13.0 0.8	46.73 .29	37.3 1.3	10.66 .85	42.2 2.9	37.97 .27	30.4 2.0
28.8	54.70 +.33	14.0 +1.2	47.03 +.31	38.8 +1.6	11.56+ .95	39.6 +2.5	38.25 +.29	28.4 +2.1
June 7.8	55.04 .35	15.4 1.5	47.34 .32	40.5 1.8	12.56 1.03	37.3 2.0	38.55 .31	26.3 2.1
17.8	55.40 .35	17.1 1.8	47.67 .33	42.4 2.0	13.62 1.08	35.5 1.5	38.87 .32	24.1 2.1
27.7	55.75 .35	19.1 2.1	48.00 .33	44.5 2.1	14.73 1.11	34.3 0.9	39.19 .32	22.0 2.1
July 7.7	56.09 .34	21.3 2.3	48.33 .32	46.7 2.2	15.84 1.11	33.7 +0.4	39.52 .32	20.0 2.0
17.7	56.42 +.32	23.6 +2.4	48.64 +.30	48.9 +2.2	16.94+1.08	33.6 −0.2	39.83 +.30	18.0 +1.8
27.7	56.73 .29	26.1 2.5	48.93 .28	51.1 2.2	17.99 1.02	34.1 0.7	40.12 .28	16.3 1.6
Aug. 6.6	57.00 .26	28.7 2.6	49.20 .25	53.3 2.1	18.97 .92	35.2 1.3	40.39 .26	14.8 1.4
16.6	57.24 .22	31.3 2.6	49.43 .21	55.3 2.0	19.83 .79	36.7 1.8	40.64 .23	13.5 1.2
26.6	57.44 .18	33.8 2.5	49.62 .18	57.3 1.9	20.55 .64	38.8 2.2	40.85 .19	12.5 0.9
Sept. 5.6	57.60 +.14	36.3 +2.4	49.78 +.14	59.0 +1.7	21.12 +.48	41.2 −2.6	41.02 +.16	11.7 +0.6
15.5	57.72 .10	38.6 2.2	49.90 .10	60.6 1.5	21.51 .30	43.9 2.8	41.16 .12	11.3 0.3
25.5	57.79 .06	40.7 2.0	49.98 .06	62.0 1.2	21.72 +.11	46.8 2.9	41.25 .08	11.1 +0.1
Oct. 5.5	57.83 +.02	42.6 1.8	50.03 +.03	63.1 1.0	21.73 −.08	49.9 3.0	41.32 .05	11.1 −0.1
15.5	57.84 −.01	44.3 1.6	50.04 .00	64.0 0.8	21.56 .26	52.8 2.9	41.35 +.01	11.3 0.3
25.4	57.81 −.04	45.7 +1.3	50.03 −.03	64.7 +0.6	21.21 −.43	55.6 −2.7	41.34 −.02	11.7 −0.5
Nov. 4.4	57.76 .06	46.9 1.0	49.99 .05	65.1 0.3	20.69 .59	58.2 2.4	41.32 .04	12.3 0.6
14.4	57.68 .08	47.8 0.7	49.93 .07	65.3 +0.1	20.03 .72	60.3 1.9	41.27 .06	13.0 0.7
24.3	57.59 .10	48.3 0.4	49.85 .08	65.4 −0.1	19.26 .81	62.0 1.4	41.20 .07	13.7 0.7
Dec. 4.3	57.47 .12	48.6 +0.1	49.76 .09	65.2 0.3	18.40 .88	63.1 0.8	41.12 .08	14.4 0.7
14.3	57.35 −.13	48.5 −0.2	49.66 −.10	64.8 −0.5	17.49 −.92	63.7 −0.2	41.03 −.09	15.1 −0.7
24.3	57.22 .13	48.1 0.5	49.55 .11	64.3 0.6	16.56 .92	63.6 +0.4	40.93 .10	15.8 0.7
34.2	57.09 −.13	47.4 −0.8	49.45 −.11	63.6 −0.7	15.64 −.89	62.8 +1.0	40.83 −.10	16.4 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Cassiopeæ.		*β* Ceti.		21 Cassiopeæ.		*ε* Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 0 34	° ′ +55 57	h m 0 38	° ′ −18 33	h m 0 38	° ′ +74 24	h m 0 57	° ′ + 7 19
	s	″	s	″	s	″	s	″
(Dec. 30.3)	28.46 −.28	37.0 −0.1	16.11 −.11	74.9 −0.6	36.48 −.69	50.2 +0.3	26.29 −.10	11.4 −0.6
Jan. 9.2	28.18 .28	36.6 0.6	15.99 .11	75.3 −0.3	35.78 .70	50.2 −0.3	26.18 .11	10.8 0.6
19.2	27.91 .27	35.8 1.1	15.88 .11	75.5 0.0	35.08 .68	49.6 0.8	26.07 .11	10.2 0.6
29.2	27.65 .25	34.5 1.5	15.77 .10	75.4 +0.2	34.41 .64	48.5 1.4	25.96 .10	9.6 0.6
Feb. 8.1	27.41 .22	32.7 1.9	15.68 .09	75.0 0.5	33.80 .57	46.8 1.9	25.86 .09	9.0 0.6
18.1	27.21 −.18	30.7 −2.2	15.60 −.07	74.4 +0.8	33.28 −.47	44.7 −2.3	25.78 −.08	8.4 −0.5
28.1	27.06 .12	28.4 2.4	15.55 .04	73.5 1.0	32.87 .35	42.2 2.6	25.71 .06	8.0 0.4
Mar. 10.1	26.97 −.06	25.9 2.5	15.52 −.01	72.4 1.3	32.58 .21	39.4 2.8	25.67 −.02	7.7 −0.2
20.0	26.94 +.01	23.4 2.4	15.53 +.02	70.9 1.5	32.44 −.06	36.6 2.9	25.66 +.01	7.6 0.0
30.0	26.99 .08	21.0 2.3	15.57 .06	69.3 1.8	32.45 +.09	33.6 2.9	25.69 .05	7.7 +0.2
Apr. 9.0	27.11 +.16	18.8 −2.1	15.66 +.10	67.4 +2.0	32.62 +.24	30.8 −2.7	25.76 +.09	8.1 +0.4
19.0	27.30 .23	16.8 1.8	15.78 .15	65.3 2.2	32.94 .39	28.2 2.4	25.87 .13	8.6 0.7
28.9	27.57 .30	15.2 1.4	15.95 .19	63.1 2.3	33.40 .53	25.9 2.1	26.02 .17	9.5 1.0
May 8.9	27.90 .36	14.0 1.0	16.16 .23	60.7 2.4	33.99 .65	24.1 1.7	26.22 .21	10.6 1.2
18.9	28.29 .41	13.3 −0.5	16.41 .26	58.3 2.4	34.69 .75	22.6 1.2	26.45 .25	12.0 1.5
28.9	28.72 +.45	13.0 0.0	16.69 +.29	55.8 +2.4	35.48 +.82	21.7 −0.7	26.72 +.28	13.5 +1.7
June 7.8	29.19 .48	13.3 +0.5	16.99 .31	53.4 2.4	36.33 .87	21.4 −0.1	27.01 .30	15.3 1.8
17.8	29.68 .49	14.0 1.0	17.31 .33	51.1 2.3	37.22 .90	21.5 +0.5	27.32 .32	17.2 1.9
27.8	30.17 .49	15.2 1.4	17.65 .33	48.9 2.1	38.13 .90	22.3 1.0	27.65 .32	19.2 2.0
July 7.7	30.66 .48	16.9 1.8	17.98 .33	47.0 1.8	39.03 .88	23.5 1.5	27.97 .32	21.2 2.0
17.7	31.13 +.46	19.0 +2.2	18.31 +.32	45.3 +1.5	39.90 +.84	25.3 +2.0	28.29 +.31	23.3 +2.0
27.7	31.58 .43	21.4 2.5	18.62 .30	43.9 1.2	40.72 .78	27.5 2.4	28.60 .30	25.3 1.9
Aug. 6.7	31.99 .39	24.1 2.8	18.91 .27	42.8 0.9	41.47 .71	30.1 2.8	28.89 .28	27.1 1.8
16.6	32.35 .34	27.1 3.0	19.17 .24	42.1 0.6	42.14 .63	33.1 3.1	29.15 .25	28.9 1.6
26.6	32.67 .29	30.2 3.2	19.40 .21	41.7 +0.2	42.72 .53	36.3 3.4	29.39 .22	30.4 1.4
Sept. 5.6	32.93 +.23	33.5 +3.3	19.59 +.17	41.7 −0.2	43.20 +.42	39.8 +3.6	29.59 +.18	31.8 +1.2
15.5	33.13 .18	36.8 3.3	19.74 .13	42.0 0.5	43.56 .31	43.5 3.7	29.75 .15	32.9 1.0
25.5	33.28 .12	40.1 3.2	19.86 .09	42.6 0.7	43.81 .19	47.2 3.7	29.89 .11	33.8 0.8
Oct. 5.5	33.37 .06	43.3 3.1	19.93 .06	43.5 0.9	43.95 +.07	50.9 3.7	29.98 .08	34.5 0.6
15.5	33.40 +.01	46.4 2.9	19.97 +.02	44.5 1.1	43.96 −.04	54.6 3.6	30.05 .05	34.9 0.4
25.4	33.38 −.04	49.2 +2.7	19.98 −.01	45.7 −1.2	43.86 −.16	58.1 +3.4	30.08 +.02	35.2 +0.2
Nov. 4.4	33.31 .09	51.9 2.4	19.95 .04	47.0 1.3	43.64 .27	61.4 3.1	30.09 −.01	35.2 0.0
14.4	33.19 .14	54.1 2.1	19.90 .06	48.3 1.3	43.32 .38	64.4 2.8	30.07 .03	35.1 −0.2
24.3	33.03 .18	56.0 1.7	19.83 .08	49.6 1.2	42.89 .47	67.0 2.4	30.03 .05	34.9 0.3
Dec. 4.3	32.84 .21	57.5 1.2	19.75 .09	50.7 1.1	42.37 .55	69.2 1.9	29.97 .07	34.5 0.4
14.3	32.61 −.24	58.5 +0.7	19.64 −.10	51.7 −0.9	41.78 −.62	70.8 +1.3	29.90 −.08	34.0 −0.5
24.3	32.36 .26	59.0 +0.2	19.54 .11	52.5 0.7	41.13 .67	71.8 0.7	29.80 .09	33.5 0.6
34.2	32.09 −.28	58.9 −0.3	19.42 −.11	53.0 −0.5	40.45 −.70	72.3 +0.1	29.70 −.10	32.9 −0.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Andromedæ.		θ¹ Ceti.		38 Cassiopeæ.		η Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 3	° ′ +35 3	h m 1 18	° ′ − 8 43	h m 1 23	° ′ +69 43	h m 1 25	° ′ +14 47
	s	″	s	″	s	″	s	″
(Dec. 30.3)	47.37 −.14	41.6 −0.2	43.57 −.10	52.6 −0.7	19.52 −.47	27.6 +0.9	48.55 −.10	62.7 −0.4
Jan. 9.3	47.22 .15	41.2 0.5	43.46 .11	53.2 0.6	19.03 .50	28.2 +0.3	48.44 .11	62.2 0.5
19.2	47.06 .16	40.6 0.8	43.35 .12	53.7 0.4	18.51 .52	28.2 −0.3	48.32 .12	61.6 0.6
29.2	46.91 .15	39.6 1.1	43.23 .11	54.0 −0.2	18.00 .51	27.5 0.9	48.20 .12	61.0 0.7
Feb. 8.2	46.76 .14	38.4 1.3	43.12 .10	54.2 0.0	17.50 .47	26.4 1.4	48.08 .11	60.2 0.7
18.1	46.63 −.12	37.0 −1.5	43.02 −.09	54.0 +0.2	17.05 −.42	24.7 −1.9	47.97 −.10	59.5 −0.7
28.1	46.53 .09	35.4 1.6	42.94 .07	53.7 0.4	16.66 .35	22.7 2.2	47.88 .08	58.8 0.7
Mar. 10.1	46.46 .05	33.8 1.6	42.87 .04	53.2 0.7	16.36 .26	20.3 2.5	47.81 .05	58.2 0.6
20.1	46.43 −.01	32.2 1.5	42.84 −.01	52.4 0.9	16.16 .15	17.7 2.7	47.77 −.02	57.7 0.4
30.0	46.45 +.04	30.8 1.4	42.85 +.02	51.3 1.2	16.07 −.03	14.9 2.7	47.78 +.02	57.4 −0.2
Apr. 9.0	46.52 +.09	29.5 −1.2	42.89 +.06	50.1 +1.4	16.10 +.09	12.2 −2.7	47.82 +.06	57.2 0.0
19.0	46.64 .15	28.4 0.9	42.98 .11	48.6 1.6	16.25 .21	9.6 2.5	47.90 .11	57.3 +0.2
29.0	46.81 .20	27.7 0.6	43.10 .15	46.8 1.8	16.52 .33	7.2 2.2	48.04 .16	57.7 0.5
May 8.9	47.04 .25	27.3 −0.2	43.28 .19	44.9 2.0	16.91 .44	5.2 1.9	48.21 .20	58.3 0.8
18.9	47.31 .29	27.2 +0.2	43.49 .23	42.9 2.1	17.40 .53	3.5 1.5	48.43 .24	59.2 1.0
28.9	47.61 +.32	27.6 +0.5	43.73 +.26	40.7 +2.2	17.97 +.61	2.2 −1.0	48.69 +.27	60.3 +1.3
June 7.8	47.95 .35	28.3 0.9	44.01 .29	38.5 2.2	18.62 .67	1.5 −0.5	48.97 .30	61.7 1.5
17.8	48.31 .37	29.4 1.2	44.31 .31	36.2 2.2	19.31 .71	1.2 0.0	49.28 .32	63.3 1.7
27.8	48.69 .37	30.8 1.5	44.62 .32	34.0 2.1	20.04 .73	1.4 +0.5	49.61 .33	65.1 1.8
July 7.8	49.06 .37	32.5 1.8	44.95 .32	31.9 2.0	20.79 .74	2.2 1.0	49.94 .33	67.0 1.9
17.7	49.43 +.36	34.5 +2.1	45.27 +.32	30.0 +1.8	21.53 +.73	3.5 +1.5	50.27 +.33	68.9 +2.0
27.7	49.78 .34	36.6 2.3	45.58 .31	28.3 1.6	22.25 .70	5.2 1.9	50.59 .32	70.9 2.0
Aug. 6.7	50.12 .32	39.0 2.4	45.88 .29	26.8 1.3	22.94 .66	7.3 2.3	50.90 .30	72.9 1.9
16.6	50.42 .29	41.4 2.5	46.15 .26	25.6 1.0	23.57 .61	9.8 2.7	51.18 .27	74.7 1.8
26.6	50.70 .25	43.9 2.5	46.40 .23	24.7 0.7	24.15 .54	12.6 3.0	51.44 .24	76.5 1.7
Sept. 5.6	50.93 +.22	46.4 +2.5	46.62 +.20	24.1 +0.4	24.66 +.47	15.7 +3.2	51.67 +.21	78.1 +1.5
15.6	51.13 .18	48.8 2.4	46.81 .17	23.8 +0.1	25.09 .39	19.0 3.4	51.86 .18	79.6 1.4
25.5	51.29 .14	51.2 2.3	46.96 .13	23.9 −0.2	25.44 .31	22.5 3.5	52.03 .15	80.9 1.2
Oct. 5.5	51.41 .10	53.4 2.2	47.07 .10	24.2 0.4	25.70 .22	26.0 3.5	52.16 .11	81.9 1.0
15.5	51.48 .06	55.5 2.0	47.15 .07	24.8 0.6	25.88 .13	29.5 3.5	52.26 .06	82.8 0.8
25.5	51.53 +.03	57.4 +1.8	47.20 +.04	25.5 −0.8	25.96 +.04	33.0 +3.4	52.32 +.05	83.5 +0.6
Nov. 4.4	51.54 −.01	59.1 1.5	47.22 +.01	26.4 0.9	25.95 −.05	36.2 3.2	52.36 +.02	84.0 0.4
14.4	51.52 .04	60.5 1.3	47.22 −.02	27.4 1.0	25.85 .14	39.3 2.9	52.37 .00	84.2 0.2
24.4	51.47 .07	61.6 1.0	47.19 .04	28.4 1.0	25.66 .23	42.1 2.6	52.35 −.03	84.4 +0.1
Dec. 4.3	51.39 .09	62.4 0.7	47.13 .06	29.4 1.0	25.39 .31	44.5 2.2	52.31 .05	84.3 −0.1
14.3	51.29 −.11	62.9 +0.3	47.06 −.08	30.4 −0.9	25.04 −.38	46.4 +1.7	52.25 −.07	84.2 −0.2
24.3	51.16 .13	63.1 0.0	46.97 .09	31.2 0.8	24.63 .44	47.9 1.2	52.16 .09	83.8 0.4
34.3	51.02 −.14	62.9 −0.3	46.87 −.11	32.0 −0.7	24.17 −.48	48.8 +0.6	52.07 −.10	83.4 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Eridani. (*Achernar.*)		ο Piscium.		β Arietis.		50 Cassiopeæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 1 33	° ′ −57 45	h m 1 39	° ′ + 8 37	h m 1 48	° ′ +20 17	h m 1 54	° ′ +71 54
	s	″	s	″	s	″	s	″
(Dec. 30.3)	46.89 −.31	107.0 −0.7	47.80 −.10	29.7 −0.5	47.01 −.10	30.8 −0.2	22.49 −.49	49.8 +1.3
Jan. 9.3	46.57 .32	107.4 −0.1	47.69 .11	29.2 0.6	46.90 .12	30.4 0.4	21.97 .55	50.8 0.7
19.2	46.25 .32	107.2 +0.5	47.58 .12	28.6 0.6	46.78 .13	29.9 0.6	21.39 .58	51.2 +0.1
29.2	45.93 .31	106.4 1.0	47.46 .12	28.0 0.6	46.65 .13	29.3 0.7	20.80 .59	51.1 −0.4
Feb. 8.2	45.63 .29	105.1 1.5	47.34 .12	27.5 0.5	46.52 .13	28.6 0.8	20.22 .57	50.3 1.0
18.1	45.34 −.26	103.3 +2.0	47.23 −.11	27.0 −0.5	46.39 −.12	27.8 −0.8	19.66 −.53	49.1 −1.5
28.1	45.10 .22	101.0 2.4	47.13 .09	26.6 0.4	46.27 .10	27.0 0.8	19.16 .46	47.3 1.9
Mar. 10.1	44.89 .18	98.4 2.8	47.05 .06	26.3 0.2	46.18 .07	26.2 0.8	18.75 .36	45.2 2.3
20.1	44.74 .12	95.4 3.1	47.00 −.03	26.1 −0.1	46.12 −.04	25.4 0.7	18.44 .25	42.7 2.5
30.0	44.65 −.06	92.1 3.4	46.99 +.01	26.1 +0.1	46.10 .00	24.8 0.6	18.25 −.13	40.1 2.7
Apr. 9.0	44.62 .00	88.6 +3.5	47.02 +.05	26.4 +0.3	46.12 +.04	24.3 −0.4	18.18 .00	37.4 −2.7
19.0	44.66 +.07	85.0 3.6	47.09 .09	26.8 0.6	46.19 .09	24.1 −0.2	18.26 +.14	34.7 2.6
29.0	44.76 .14	81.3 3.7	47.20 .14	27.5 0.8	46.30 .14	24.0 +0.1	18.47 .28	32.1 2.4
May 8.9	44.94 .21	77.7 3.6	47.36 .18	28.5 1.1	46.46 .18	24.3 0.4	18.81 .40	29.8 2.2
18.9	45.19 .28	74.1 3.4	47.57 .22	29.6 1.3	46.67 .22	24.8 0.6	19.27 .51	27.8 1.8
28.9	45.50 +.34	70.8 +3.2	47.81 +.26	31.0 +1.5	46.91 +.26	25.6 +0.9	19.84 +.61	26.2 −1.4
June 7.8	45.87 .39	67.7 2.9	48.08 .29	32.6 1.7	47.19 .29	26.6 1.2	20.50 .70	25.0 0.9
17.8	46.28 .43	64.9 2.6	48.37 .31	34.3 1.8	47.50 .32	27.9 1.4	21.24 .76	24.3 −0.5
27.8	46.73 .46	62.5 2.2	48.69 .32	36.2 1.9	47.83 .33	29.4 1.6	22.02 .80	24.1 0.0
July 7.8	47.20 .48	60.6 1.7	49.01 .32	38.1 1.9	48.16 .34	31.0 1.7	22.84 .82	24.3 +0.5
17.7	47.69 +.49	59.2 +1.2	49.34 +.32	40.1 +1.9	48.50 +.34	32.8 +1.8	23.67 +.83	25.1 +1.0
27.7	48.18 .48	58.3 +0.6	49.65 .31	42.0 1.9	48.84 .33	34.7 1.9	24.49 .81	26.4 1.5
Aug. 6.7	48.65 .46	58.0 0.0	49.96 .30	43.8 1.8	49.16 .31	36.6 1.9	25.30 .78	28.1 1.9
16.7	49.09 .42	58.2 −0.6	50.25 .28	45.5 1.6	49.46 .29	38.5 1.9	26.06 .73	30.2 2.3
26.6	49.50 .38	59.1 1.1	50.51 .25	47.0 1.4	49.74 .27	40.4 1.8	26.76 .67	32.7 2.6
Sept. 5.6	49.85 +.33	60.4 −1.6	50.75 +.22	48.3 +1.2	49.99 +.24	42.1 +1.7	27.40 +.60	35.5 +2.9
15.6	50.15 .27	62.3 2.0	50.95 .19	49.5 1.0	50.22 .21	43.8 1.6	27.97 .52	38.5 3.2
25.5	50.38 .20	64.5 2.4	51.12 .16	50.4 0.8	50.41 .17	45.2 1.4	28.45 .44	41.8 3.3
Oct. 5.5	50.55 .13	67.0 2.7	51.27 .12	51.1 0.6	50.57 .14	46.6 1.2	28.85 .35	45.2 3.4
15.5	50.64 +.06	69.8 2.8	51.38 .09	51.6 0.4	50.69 .11	47.7 1.1	29.14 .25	48.7 3.5
25.5	50.67 −.01	72.7 −2.9	51.45 +.06	51.8 +0.2	50.79 +.08	48.7 +0.9	29.33 +.14	52.1 +3.4
Nov. 4.4	50.62 .08	75.6 2.8	51.50 .03	51.9 0.0	50.85 .05	49.5 0.7	29.42 +.04	55.5 3.3
14.4	50.51 .14	78.3 2.6	51.52 +.01	51.9 −0.1	50.88 +.02	50.1 0.5	29.41 −.07	58.8 3.1
24.4	50.35 .19	80.8 2.3	51.52 −.02	51.7 0.3	50.89 −.01	50.5 0.3	29.28 .18	61.8 2.9
Dec. 4.4	50.14 .23	83.0 1.9	51.49 .04	51.3 0.4	50.86 .04	50.8 +0.2	29.05 .28	64.5 2.5
14.3	49.88 −.27	84.7 −1.5	51.44 −.06	50.9 −0.5	50.81 −.06	50.9 0.0	28.73 −.37	66.8 +2.1
24.3	49.59 .30	86.0 1.0	51.36 .08	50.4 0.5	50.74 .08	50.8 −0.2	28.32 .45	68.7 1.6
34.3	49.28 −.32	86.7 −0.4	51.27 −.10	49.9 −0.6	50.64 −.11	50.5 −0.3	27.84 −.51	70.0 +1.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Arietis.		ξ¹ Ceti.		ι Cassiopeæ.		ξ² Ceti.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$2^{h}\ 1^{m}$	$+22^{\circ}\ 57'$	$2^{h}\ 7^{m}$	$+\ 8^{\circ}\ 20'$	$2^{h}\ 20^{m}$	$+66^{\circ}\ 55'$	$2^{h}\ 22^{m}$	$+\ 7^{\circ}\ 59'$
	s	″	s	″	s	″	s	″
(Dec. 30.3)	11.90 −.10	48.6 −0.1	23.10 −.08	61.7 −0.5	19.69 −.34	51.6 +1.4	31.67 −.07	9.6 −0.6
Jan. 9.3	11.79 .12	48.4 0.3	23.00 .10	61.2 0.5	19.33 .39	52.8 0.9	31.58 .10	9.0 0.5
19.2	11.67 .13	48.0 0.5	22.89 .12	60.7 0.5	18.92 .43	53.4 +0.4	31.47 .12	8.5 0.5
29.2	11.53 .14	47.4 0.6	22.77 .13	60.1 0.5	18.47 .45	53.5 −0.2	31.35 .13	8.0 0.5
Feb. 8.2	11.39 .14	46.7 0.8	22.64 .13	59.7 0.5	18.02 .45	53.0 0.7	31.22 .13	7.5 0.4
18.2	11.25 −.13	45.9 −0.8	22.51 −.12	59.2 −0.4	17.58 −.43	52.1 −1.2	31.08 −.13	7.1 −0.4
28.2	11.13 .11	45.1 0.9	22.39 .11	58.8 0.3	17.17 .39	50.6 1.6	30.96 .12	6.8 0.3
Mar. 10.1	11.03 .09	44.2 0.9	22.30 .09	58.5 −0.2	16.82 .32	48.8 2.0	30.85 .10	6.5 −0.2
20.1	10.95 .06	43.4 0.8	22.22 .06	58.4 0.0	16.53 .24	46.6 2.3	30.77 .07	6.4 0.0
30.1	10.92 −.02	42.6 0.7	22.19 −.02	58.5 +0.1	16.34 .14	44.2 2.5	30.72 −.03	6.5 +0.1
Apr. 9.1	10.92 +.03	42.0 −0.5	22.19 +.02	58.7 +0.3	16.25 −.04	41.7 −2.5	30.70 +.01	6.7 +0.2
19.0	10.98 .08	41.5 0.3	22.23 .07	59.1 0.5	16.26 +.07	39.2 2.5	30.73 .05	7.1 0.5
29.0	11.08 .13	41.3 −0.1	22.32 .11	59.8 0.8	16.38 .18	36.7 2.4	30.81 .10	7.8 0.8
May 9.0	11.23 .18	41.4 +0.2	22.45 .16	60.7 1.0	16.62 .28	34.5 2.1	30.93 .14	8.7 1.0
18.9	11.43 .22	41.7 0.4	22.63 .20	61.8 1.2	16.95 .38	32.5 1.8	31.09 .18	9.8 1.2
28.9	11.67 +.26	42.3 +0.7	22.85 +.24	63.1 +1.4	17.38 +.47	30.8 −1.5	31.30 +.23	11.1 +1.4
June 7.9	11.95 .29	43.1 1.0	23.10 .27	64.6 1.6	17.89 .54	29.6 1.1	31.54 .26	12.5 1.6
17.9	12.25 .32	44.2 1.2	23.38 .29	66.3 1.7	18.46 .60	28.7 0.6	31.81 .29	14.2 1.7
27.8	12.58 .33	45.6 1.4	23.69 .31	68.0 1.8	19.09 .65	28.3 −0.2	32.11 .31	15.9 1.8
July 7.8	12.92 .34	47.1 1.6	24.00 .32	69.9 1.8	19.75 .67	28.4 +0.3	32.42 .32	17.7 1.8
17.8	13.26 +.34	48.8 +1.7	24.33 +.32	71.7 +1.8	20.44 +.68	29.0 +0.8	32.74 +.32	19.5 +1.8
27.7	13.61 .34	50.6 1.8	24.65 .32	73.5 1.8	21.12 .68	30.0 1.2	33.06 .32	21.3 1.7
Aug. 6.7	13.94 .32	52.4 1.9	24.96 .31	75.3 1.7	21.80 .66	31.4 1.6	33.38 .31	23.0 1.6
16.7	14.25 .30	54.3 1.9	25.26 .29	76.9 1.5	22.45 .63	33.2 2.0	33.68 .29	24.6 1.5
26.7	14.54 .28	56.1 1.8	25.54 .27	78.4 1.4	23.07 .60	35.3 2.3	33.96 .27	26.0 1.3
Sept. 5.6	14.81 +.25	57.9 +1.7	25.79 +.24	79.6 +1.2	23.64 +.55	37.8 +2.6	34.23 +.25	27.2 +1.1
15.6	15.04 .22	59.6 1.6	26.02 .21	80.7 0.9	24.16 .49	40.5 2.8	34.47 .22	28.2 0.9
25.6	15.25 .19	61.2 1.5	26.22 .18	81.5 0.7	24.62 .42	43.5 3.0	34.68 .20	29.0 0.7
Oct. 5.6	15.43 .16	62.6 1.3	26.38 .15	82.1 0.5	25.01 .35	46.6 3.1	34.86 .17	29.6 0.5
15.5	15.57 .13	63.9 1.2	26.52 .12	82.6 0.3	25.33 .28	49.8 3.2	35.01 .14	29.9 +0.2
25.5	15.68 +.10	65.0 +1.0	26.63 +.09	82.8 +0.1	25.57 +.20	53.0 +3.2	35.14 +.11	30.0 0.0
Nov. 4.5	15.76 .06	65.9 0.9	26.71 .06	82.8 −0.1	25.73 .12	56.2 3.1	35.23 .08	30.0 −0.1
14.4	15.81 +.03	66.7 0.7	26.76 .03	82.7 0.2	25.80 +.03	59.3 3.0	35.29 .05	29.9 0.2
24.4	15.82 .00	67.3 0.5	26.78 +.01	82.4 0.3	25.79 −.05	62.2 2.8	35.33 +.02	29.6 0.3
Dec. 4.4	15.81 −.03	67.7 0.3	26.77 −.02	82.1 0.4	25.70 .14	64.8 2.5	35.33 −.01	29.2 0.4
14.4	15.77 −.06	67.9 +0.1	26.73 −.05	81.6 −0.5	25.52 −.22	67.1 +2.1	35.31 −.04	28.7 −0.5
24.3	15.70 .08	67.9 −0.1	26.67 .07	81.1 0.5	25.26 .29	69.1 1.7	35.26 .06	28.2 0.5
34.3	15.60 −.10	67.8 −0.3	26.59 −.09	80.6 −0.5	24.94 −.35	70.5 +1.2	35.18 −.08	27.7 −0.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Ceti.		α Ceti.		48 Cephei (H.)		ζ Arietis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 2 37	° ′ + 2 47	h m 2 56	° ′ + 3 40	h m 3 6	° ′ +77 20	h m 3 8	° ′ +20 39
	s	″	s	″	s	″	s	″
(Dec. 30.3)	48.86 −.07	23.4 −0.7	44.77 −.06	29.4 −0.7	53.89 −.53	61.2 +2.2	48.95 −.06	14.2 0.0
Jan. 9.3	48.77 .10	22.7 0.6	44.69 .09	28.7 0.6	53.27 .67	63.2 1.7	48.88 .09	14.1 −0.1
19.3	48.67 .12	22.2 0.6	44.59 .11	28.1 0.6	52.54 .77	64.6 1.2	48.78 .11	13.9 0.2
29.3	48.54 .13	21.6 0.5	44.47 .13	27.6 0.5	51.73 .84	65.5 +0.6	48.65 .13	13.6 0.3
Feb. 8.2	48.41 .13	21.2 0.4	44.34 .14	27.2 0.4	50.86 .87	65.8 0.0	48.51 .15	13.2 0.4
18.2	48.27 −.13	20.9 −0.3	44.20 −.14	26.8 −0.3	49.98 −.87	65.5 −0.6	48.35 −.15	12.7 −0.5
28.2	48.14 .12	20.7 −0.1	44.06 .13	26.6 −0.1	49.13 .89	64.7 1.1	48.20 .15	12.2 0.5
Mar. 10.2	48.03 .11	20.7 0.0	43.93 .12	26.6 0.0	48.34 .74	63.3 1.6	48.06 .13	11.7 0.6
20.1	47.93 .08	20.8 +0.2	43.82 .09	26.6 +0.2	47.65 .62	61.4 2.0	47.93 .11	11.1 0.5
30.1	47.86 .05	21.1 0.4	43.74 .06	26.9 0.3	47.10 .47	59.2 2.4	47.84 .08	10.6 0.5
Apr. 9.1	47.83 −.01	21.6 +0.6	43.69 −.02	27.3 +0.5	46.72 −.30	56.6 −2.6	47.78 −.04	10.2 −0.4
19.0	47.85 +.03	22.3 0.8	43.69 +.02	28.0 0.7	46.50 −.12	54.0 2.7	47.77 +.01	9.8 0.3
29.0	47.90 .08	23.2 1.0	43.73 .06	28.8 0.9	46.48 +.07	51.2 2.8	47.80 .06	9.7 −0.1
May 9.0	48.00 .12	24.4 1.2	43.81 .11	29.9 1.1	46.65 .26	48.5 2.7	47.89 .11	9.7 +0.1
19.0	48.15 .17	25.7 1.4	43.94 .15	31.1 1.3	47.01 .44	45.9 2.5	48.02 .16	9.9 0.3
28.9	48.34 +.21	27.2 +1.6	44.11 +.19	32.5 +1.5	47.54 +.61	43.5 −2.2	48.20 +.20	10.3 +0.5
June 7.9	48.56 .24	28.9 1.7	44.33 .23	34.1 1.6	48.23 .76	41.5 1.9	48.42 .24	10.9 0.7
17.9	48.82 .27	30.7 1.8	44.57 .26	35.8 1.7	49.07 .89	39.8 1.5	48.68 .27	11.8 0.9
27.8	49.11 .29	32.6 1.9	44.85 .28	37.6 1.8	50.02 1.00	38.5 1.1	48.96 .30	12.8 1.1
July 7.8	49.41 .31	34.4 1.8	45.14 .30	39.4 1.8	51.07 1.08	37.6 0.6	49.28 .32	14.0 1.2
17.8	49.72 +.32	36.3 +1.8	45.45 +.31	41.2 +1.8	52.19+1.14	37.2 −0.1	49.60 +.33	15.3 +1.3
27.8	50.04 .32	38.1 1.7	45.76 .31	42.9 1.7	53.35 1.17	37.3 +0.3	49.94 .33	16.7 1.4
Aug. 6.7	50.35 .31	39.7 1.5	46.08 .31	44.5 1.5	54.52 1.18	37.9 0.8	50.27 .33	18.1 1.4
16.7	50.65 .30	41.2 1.3	46.38 .30	45.9 1.3	55.70 1.16	38.9 1.2	50.60 .32	19.5 1.4
26.7	50.94 .28	42.4 1.1	46.68 .29	47.2 1.1	56.85 1.12	40.4 1.7	50.92 .31	21.0 1.4
Sept. 5.7	51.21 +.26	43.4 +0.9	46.96 +.27	48.2 +0.9	57.95+1.07	42.2 +2.1	51.22 +.29	22.3 +1.3
15.6	51.46 .23	44.2 0.6	47.22 .25	49.0 0.6	58.98 .99	44.5 2.4	51.50 .27	23.6 1.2
25.6	51.68 .20	44.7 0.4	47.45 .22	49.5 0.4	59.93 .90	47.0 2.7	51.77 .25	24.7 1.1
Oct. 5.6	51.87 .18	45.0 +0.1	47.66 .20	49.7 +0.1	60.78 .79	49.9 3.0	52.00 .22	25.8 1.0
15.5	52.03 .15	45.0 −0.1	47.84 .17	49.8 −0.1	61.51 .67	53.0 3.2	52.21 .19	26.6 0.8
25.5	52.17 +.12	44.8 −0.3	48.00 +.14	49.6 −0.3	62.11 +.53	56.2 +3.3	52.39 +.17	27.4 +0.7
Nov. 4.5	52.27 .09	44.4 0.5	48.12 .11	49.2 0.5	62.57 .38	59.6 3.4	52.54 .14	28.0 0.6
14.5	52.35 .06	43.9 0.6	48.22 .08	48.7 0.6	62.87 .22	63.0 3.4	52.66 .10	28.5 0.4
24.4	52.40 +.03	43.2 0.7	48.28 .05	48.1 0.7	63.00 +.05	66.3 3.3	52.75 .07	28.9 0.3
Dec. 4.4	52.41 .00	42.5 0.7	48.31 +.02	47.4 0.7	62.96 −.12	69.5 3.1	52.80 +.04	29.2 0.2
14.4	52.40 −.03	41.8 −0.7	48.31 −.01	46.7 −0.7	62.76 −.29	72.5 +2.8	52.82 .00	29.4 +0.1
24.4	52.35 .06	41.1 0.7	48.29 .04	45.9 0.7	62.39 .45	75.2 2.4	52.80 −.03	29.4 0.0
34.3	52.28 −.08	40.4 −0.6	48.23 −.07	45.2 −0.7	61.87 −.59	77.4 +2.0	52.75 −.07	29.4 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Persei.		ε Eridani.		δ Persei.		η Tauri.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 3 16	+49° 29′	h m 3 27	− 9° 48′	h m 3 35	+47° 26′	h m 3 41	+23° 46′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	45.88 −.10	16.8 +1.2	56.92 −.06	59.8 −1.2	23.38 −.07	68.8 +1.3	11.59 −.04	47.5 +0.2
Jan. 9.3	45.75 .15	17.9 0.9	56.85 .09	60.9 1.0	23.28 .13	69.9 1.0	11.53 .07	47.6 +0.1
19.3	45.58 .19	18.6 0.6	56.75 .11	61.9 0.8	23.13 .17	70.7 0.7	11.45 .10	47.6 0.0
29.3	45.37 .22	19.0 +0.2	56.62 .13	62.6 0.6	22.94 .20	71.2 +0.3	11.33 .13	47.5 −0.2
Feb. 8.2	45.14 .24	19.0 −0.2	56.48 .15	63.1 0.4	22.72 .23	71.3 0.0	11.18 .15	47.3 0.3
18.2	44.89 −.25	18.6 −0.6	56.32 −.16	63.3 −0.1	22.49 −.24	71.1 −0.4	11.02 −.16	46.9 −0.4
28.2	44.64 .24	17.8 0.9	56.16 .16	63.3 +0.1	22.25 .24	70.5 0.7	10.86 .16	46.5 0.5
Mar. 10.2	44.41 .22	16.7 1.2	56.01 .15	63.1 0.4	22.02 .22	69.6 1.0	10.70 .15	46.0 0.5
20.1	44.21 .18	15.4 1.5	55.87 .13	62.5 0.7	21.81 .19	68.5 1.3	10.55 .13	45.5 0.6
30.1	44.05 .13	13.8 1.6	55.76 .10	61.8 0.9	21.64 .14	67.1 1.5	10.43 .10	44.9 0.5
Apr. 9.1	43.95 −.07	12.1 −1.7	55.68 −.06	60.7 +1.2	21.53 −.09	65.6 −1.6	10.35 −.06	44.4 −0.5
19.1	43.90 −.01	10.4 1.7	55.63 −.02	59.4 1.4	21.46 −.03	64.0 1.6	10.30 −.02	44.0 0.4
29.0	43.93 +.06	8.7 1.6	55.63 +.02	57.9 1.6	21.46 +.03	62.4 1.6	10.31 +.03	43.6 0.3
May 9.0	44.02 .13	7.1 1.5	55.67 .07	56.2 1.8	21.53 .10	60.9 1.5	10.36 .08	43.4 −0.1
19.0	44.18 .19	5.6 1.3	55.76 .11	54.3 2.0	21.66 .16	59.5 1.3	10.46 .13	43.3 0.0
28.9	44.40 +.25	4.4 −1.1	55.90 +.15	52.2 +2.1	21.85 +.23	58.3 −1.1	10.61 +.17	43.4 +0.2
June 7.9	44.69 .31	3.5 0.8	56.07 .19	50.0 2.2	22.11 .28	57.4 0.8	10.81 .21	43.7 0.4
17.9	45.02 .36	2.8 0.5	56.29 .23	47.8 2.2	22.42 .33	56.7 0.6	11.05 .25	44.3 0.6
27.9	45.40 .40	2.5 −0.2	56.53 .26	45.6 2.2	22.77 .37	56.2 −0.3	11.32 .28	44.9 0.8
July 7.8	45.82 .43	2.4 +0.2	56.80 .28	43.4 2.1	23.16 .40	56.1 0.0	11.62 .31	45.8 0.9
17.8	46.25 +.44	2.8 +0.5	57.09 +.30	41.4 +2.0	23.57 +.42	56.3 +0.3	11.94 +.33	46.8 +1.0
27.8	46.70 .45	3.4 0.8	57.39 .31	39.5 1.8	24.00 .44	56.8 0.6	12.27 .34	47.9 1.1
Aug. 6.8	47.16 .45	4.4 1.1	57.70 .31	37.9 1.5	24.44 .44	57.5 0.9	12.61 .34	49.0 1.2
16.7	47.61 .44	5.6 1.3	58.00 .30	36.5 1.2	24.88 .44	58.5 1.1	12.95 .34	50.2 1.2
26.7	48.05 .43	7.0 1.6	58.30 .29	35.5 0.9	25.31 .43	59.8 1.3	13.28 .33	51.4 1.2
Sept. 5.7	48.47 +.41	8.7 +1.8	58.59 +.28	34.8 +0.5	25.73 +.41	61.2 +1.5	13.60 +.32	52.6 +1.2
15.6	48.87 .38	10.5 1.9	58.86 .26	34.4 +0.2	26.13 .39	62.8 1.7	13.91 .30	53.8 1.1
25.6	49.23 .35	12.5 2.0	59.11 .24	34.5 −0.2	26.50 .36	64.6 1.8	14.20 .28	54.8 1.0
Oct. 5.6	49.57 .32	14.6 2.1	59.34 .21	34.8 0.5	26.85 .33	66.4 1.9	14.47 .26	55.8 0.9
15.6	49.87 .28	16.8 2.2	59.54 .19	35.5 0.8	27.16 .30	68.4 2.0	14.71 .23	56.7 0.8
25.5	50.13 +.24	19.0 +2.2	59.71 +.16	36.5 −1.1	27.44 +.26	70.4 +2.0	14.93 +.20	57.4 +0.7
Nov. 4.5	50.34 .19	21.2 2.2	59.86 .13	37.7 1.3	27.68 .22	72.4 2.0	15.12 .17	58.1 0.6
14.5	50.51 .14	23.4 2.1	59.97 .10	39.1 1.4	27.87 .17	74.4 2.0	15.28 .14	58.7 0.5
24.5	50.63 .09	25.5 2.0	60.06 .07	40.6 1.5	28.01 .12	76.3 1.9	15.40 .11	59.2 0.5
Dec. 4.4	50.69 +.04	27.5 1.9	60.11 +.03	42.1 1.5	28.11 .07	78.1 1.8	15.49 .07	59.6 0.4
14.4	50.70 −.02	29.2 +1.7	60.12 .00	43.6 −1.4	28.15 +.01	79.8 +1.6	15.54 +.03	60.0 +0.3
24.4	50.66 .07	30.8 1.4	60.10 −.03	45.0 1.3	28.13 −.04	81.3 1.4	15.55 −.01	60.2 0.2
34.4	50.56 −.12	32.0 +1.1	60.05 −.07	46.3 −1.1	28.06 −.09	82.6 +1.1	15.53 −.05	60.4 +0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Persei.		γ Eridani.		γ Tauri.		ε Tauri.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 3 47	+31° 34′	h m 3 53	−13° 48′	h m 4 13	+15° 22′	h m 4 22	+18° 56′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	28.79 −.03	18.1 +0.5	5.97 −.04	35.5 −1.5	46.45 −.01	25.4 −0.2	26.42 .00	51.0 0.0
Jan. 9.3	28.74 .07	18.6 0.4	5.91 .08	36.9 1.3	46.43 .05	25.1 0.2	26.40 −.04	51.0 −0.1
19.3	28.64 .11	18.9 +0.2	5.82 .11	38.0 1.0	46.36 .08	24.9 0.3	26.34 .08	50.9 0.1
29.3	28.51 .14	19.0 0.0	5.70 .13	38.9 0.8	46.26 .11	24.6 0.3	26.25 .11	50.7 0.1
Feb. 8.3	28.36 .16	19.0 −0.2	5.55 .15	39.6 0.5	46.14 .14	24.4 0.3	26.12 .14	50.6 0.2
18.2	28.18 −.18	18.7 −0.3	5.39 −.16	39.9 −0.2	45.99 −.15	24.1 −0.3	25.97 −.16	50.4 −0.2
28.2	28.00 .18	18.3 0.5	5.22 .17	40.0 +0.1	45.83 .16	23.9 0.3	25.81 .16	50.1 0.2
Mar. 10.2	27.83 .17	17.7 0.6	5.05 .16	39.7 0.4	45.67 .16	23.6 0.2	25.64 .16	49.9 0.3
20.2	27.66 .15	17.0 0.7	4.90 .14	39.2 0.7	45.51 .14	23.4 0.2	25.48 .15	49.6 0.3
30.1	27.53 .12	16.2 0.8	4.77 .12	38.3 1.0	45.38 .12	23.2 0.1	25.34 .13	49.3 0.3
Apr. 9.1	27.43 −.08	15.4 −0.8	4.66 −.09	37.2 +1.2	45.28 −.09	23.1 −0.1	25.23 −.10	49.1 −0.2
19.1	27.38 −.03	14.5 0.8	4.60 −.05	35.8 1.5	45.21 −.05	23.1 0.0	25.16 .06	48.9 −0.1
29.1	27.37 +.02	13.7 0.7	4.57 .00	34.2 1.7	45.18 .00	23.2 +0.1	25.12 −.01	48.8 0.0
May 9.0	27.42 .08	13.1 0.6	4.59 +.04	32.3 1.9	45.20 +.04	23.4 0.3	25.13 +.04	48.8 +0.1
19.0	27.52 .13	12.5 0.4	4.65 .09	30.3 2.1	45.27 .09	23.7 0.4	25.19 .08	49.0 0.2
29.0	27.68 +.18	12.2 −0.3	4.76 +.13	28.1 +2.2	45.38 +.13	24.3 +0.6	25.30 +.13	49.3 +0.3
June 7.9	27.88 .22	12.0 −0.1	4.91 .17	25.8 2.3	45.54 .18	24.9 0.7	25.45 .17	49.7 0.5
17.9	28.13 .26	12.1 +0.1	5.10 .21	23.5 2.3	45.74 .22	25.7 0.9	25.65 .21	50.2 0.6
27.9	28.41 .30	12.3 0.3	5.33 .24	21.2 2.3	45.97 .25	26.7 1.0	25.88 .25	50.9 0.8
July 7.9	28.73 .33	12.8 0.5	5.59 .27	18.9 2.2	46.23 .27	27.7 1.1	26.14 .28	51.8 0.9
17.8	29.06 +.35	13.4 +0.7	5.86 +.29	16.7 +2.0	46.52 +.29	28.8 +1.1	26.43 +.30	52.7 +0.9
27.8	29.41 .36	14.2 0.9	6.16 .30	14.8 1.8	46.82 .31	30.0 1.1	26.74 .31	53.6 1.0
Aug. 6.8	29.77 .36	15.2 1.0	6.46 .31	13.1 1.5	47.14 .32	31.1 1.1	27.05 .32	54.6 1.0
16.8	30.14 .36	16.3 1.1	6.77 .31	11.7 1.2	47.46 .32	32.2 1.1	27.38 .33	55.6 1.0
26.7	30.49 .35	17.4 1.2	7.07 .30	10.6 0.8	47.78 .32	33.2 1.0	27.71 .32	56.5 0.9
Sept. 5.7	30.84 +.34	18.6 +1.2	7.37 +.29	10.0 +0.5	48.09 +.31	34.1 +0.9	28.03 +.32	57.4 +0.8
15.7	31.17 .32	19.9 1.2	7.65 .28	9.7 +0.1	48.40 .30	34.9 0.7	28.34 .31	58.2 0.7
25.6	31.48 .30	21.1 1.2	7.92 .26	9.9 −0.3	48.69 .28	35.5 0.6	28.64 .29	58.9 0.6
Oct. 5.6	31.77 .28	22.3 1.2	8.17 .24	10.4 0.7	48.96 .27	36.0 0.4	28.93 .28	59.4 0.5
15.6	32.04 .25	23.5 1.2	8.39 .21	11.3 1.0	49.22 .25	36.3 0.2	29.20 .26	59.8 0.4
25.6	32.28 +.22	24.7 +1.1	8.59 +.18	12.5 −1.3	49.46 +.22	36.5 +0.1	29.45 +.24	60.1 +0.3
Nov. 4.5	32.49 .19	25.8 1.1	8.76 .15	14.0 1.5	49.67 .20	36.6 0.0	29.67 .21	60.3 0.2
14.5	32.67 .16	26.8 1.0	8.90 .12	15.6 1.7	49.85 .17	36.5 −0.1	29.87 .18	60.5 +0.1
24.5	32.81 .12	27.8 0.9	9.01 .09	17.4 1.8	50.00 .13	36.4 0.2	30.03 .15	60.5 0.0
Dec. 4.5	32.91 .08	28.6 0.8	9.08 .05	19.2 1.8	50.12 .10	36.2 0.2	30.16 .11	60.5 0.0
14.4	32.97 +.04	29.4 +0.7	9.11 +.02	21.0 −1.7	50.20 +.06	36.0 −0.2	30.25 +.07	60.5 0.0
24.4	32.98 −.01	30.1 0.6	9.11 −.02	22.7 1.6	50.24 +.02	35.7 0.2	30.30 +.03	60.5 −0.1
34.4	32.95 −.05	30.7 +0.5	9.07 −.05	24.2 −1.4	50.24 −.02	35.5 −0.2	30.31 −.02	60.4 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Tauri. (*Aldebaran.*)		*α* Camelopardalis.		*ι* Aurigæ.		11 Orionis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 4 29	+16° 17′	h m 4 43	+66° 9′	h m 4 50	+32° 59′	h m 4 58	+15° 15′
	s	″	s	″	s	″	s	″
(Dec. 30.4)	51.13 +.01	53.8 −0.2	32.61 −.04	58.5 +2.4	6.45 +.03	63.5 +0.7	31.65 +.03	30.3 −0.3
Jan. 9.4	51.12 −.03	53.5 0.2	32.51 .14	60.8 2.1	6.45 −.02	64.2 0.6	31.66 −.01	30.0 0.3
19.4	51.07 .07	53.3 0.2	32.32 .24	62.9 1.8	6.40 .07	64.8 0.5	31.62 .05	29.8 0.2
29.3	50.97 .11	53.1 0.2	32.04 .32	64.5 1.4	6.31 .11	65.3 0.4	31.55 .09	29.5 0.2
Feb. 8.3	50.85 .13	52.9 0.2	31.69 .38	65.7 1.0	6.18 .15	65.6 0.2	31.44 .12	29.4 0.2
18.3	50.71 −.15	52.7 −0.2	31.28 −.42	66.5 +0.5	6.01 −.17	65.8 +0.1	31.30 −.15	29.2 −0.2
28.2	50.55 .16	52.5 0.2	30.84 .44	66.8 0.0	5.83 .19	65.7 −0.1	31.15 .17	29.0 0.2
Mar. 10.2	50.38 .16	52.2 0.2	30.39 .44	66.6 −0.5	5.64 .19	65.6 0.3	30.98 .17	28.9 0.1
20.2	50.22 .15	52.0 0.2	29.95 .42	65.9 0.9	5.45 .18	65.2 0.4	30.81 .16	28.7 0.1
30.2	50.08 .13	51.9 0.2	29.55 .37	64.8 1.3	5.28 .16	64.7 0.5	30.66 .14	28.6 −0.1
Apr. 9.1	49.97 −.10	51.7 −0.1	29.21 −.30	63.3 −1.7	5.13 −.13	64.1 −0.6	30.53 −.12	28.6 0.0
19.1	49.89 .06	51.7 0.0	28.94 .22	61.5 2.0	5.02 .09	63.4 0.7	30.43 .08	28.6 0.0
29.1	49.85 −.02	51.7 +0.1	28.76 .13	59.4 2.2	4.95 −.04	62.7 0.7	30.37 −.04	28.7 +0.1
May 9.1	49.85 +.03	51.8 0.2	28.68 −.03	57.2 2.3	4.94 +.01	61.9 0.7	30.35 .00	28.9 0.2
19.0	49.90 .08	52.1 0.3	28.71 +.08	54.9 2.3	4.98 .06	61.2 0.6	30.37 +.05	29.2 0.3
29.0	50.00 +.12	52.5 +0.5	28.84 +.18	52.6 −2.2	5.07 +.11	60.6 −0.5	30.44 +.09	29.6 +0.5
June 8.0	50.14 .16	53.1 0.6	29.06 .28	50.4 2.1	5.24 .16	60.1 0.4	30.56 .14	30.1 0.6
17.9	50.33 .20	53.8 0.7	29.39 .37	48.4 1.9	5.40 .21	59.8 0.3	30.71 .18	30.8 0.7
27.9	50.55 .24	54.6 0.9	29.80 .45	46.5 1.7	5.63 .25	59.6 −0.1	30.91 .21	31.5 0.8
July 7.9	50.80 .27	55.5 0.9	30.29 .52	44.9 1.4	5.90 .29	59.5 0.0	31.14 .24	32.3 0.9
17.9	51.08 +.29	56.5 +1.0	30.85 +.58	43.6 −1.1	6.20 +.32	59.6 +0.2	31.40 +.27	33.2 +0.9
27.8	51.38 .29	57.5 1.0	31.45 .63	42.7 0.8	6.53 .34	59.8 0.3	31.68 .29	34.1 0.9
Aug. 6.8	51.69 .31	58.5 1.0	32.10 .66	42.1 0.4	6.87 .35	60.2 0.4	31.97 .30	35.0 0.9
16.8	52.01 .32	59.5 1.0	32.78 .68	41.8 −0.1	7.22 .36	60.6 0.5	32.28 .31	35.8 0.8
26.8	52.33 .32	60.4 0.9	33.47 .70	41.9 +0.3	7.58 .36	61.2 0.6	32.59 .32	36.6 0.7
Sept. 5.7	52.65 +.31	61.2 +0.8	34.17 +.70	42.4 +0.6	7.95 +.36	61.8 +0.6	32.91 +.32	37.3 +0.6
15.7	52.96 .30	61.9 0.6	34.86 .68	43.2 1.0	8.31 .35	62.4 0.7	33.22 .31	37.8 0.5
25.7	53.26 .29	62.5 0.5	35.53 .66	44.3 1.3	8.66 .34	63.1 0.7	33.53 .30	38.2 0.3
Oct. 5.6	53.54 .28	62.9 0.3	36.18 .63	45.8 1.6	8.99 .33	63.9 0.7	33.83 .29	38.4 +0.2
15.6	53.81 .26	63.2 0.2	36.80 .59	47.5 1.9	9.32 .31	64.6 0.7	34.12 .28	38.5 0.0
25.6	54.06 +.24	63.3 +0.1	37.36 +.54	49.5 +2.1	9.62 +.29	65.3 +0.8	34.39 +.26	38.4 −0.1
Nov. 4.6	54.29 .22	63.3 0.0	37.87 .47	51.7 2.3	9.90 .26	66.1 0.8	34.63 .24	38.3 0.2
14.5	54.49 .19	63.3 −0.1	38.31 .40	54.2 2.5	10.15 .23	66.9 0.8	34.86 .21	38.1 0.3
24.5	54.66 .15	63.1 0.2	38.67 .32	56.7 2.6	10.37 .19	67.7 0.8	35.05 .18	37.7 0.3
Dec. 4.5	54.79 .11	62.9 0.2	38.94 .23	59.4 2.6	10.54 .15	68.4 0.8	35.22 .14	37.4 0.4
14.5	54.89 +.08	62.7 −0.2	39.12 +.13	62.0 +2.6	10.67 +.11	69.2 +0.8	35.34 +.10	37.0 −0.4
24.4	54.94 +.04	62.5 0.2	39.19 +.02	64.6 2.5	10.76 .06	70.0 0.7	35.42 .06	36.7 0.3
34.4	54.96 −.01	62.3 −0.3	39.16 −.08	67.0 +2.3	10.79 +.01	70.7 +0.7	35.46 +.02	36.4 −0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Aurigæ. (*Capella.*)		*β* Orionis. (*Rigel.*)		*β* Tauri.		Groombridge 966.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 5 8	° ′ +45 53	h m 5 9	° ′ − 8 19	h m 5 19	° ′ +28 31	h m 5 25	° ′ +74 58
	s	″	s	″	s	″	s	″
(Dec. 30.4)	52.82 +.04	35.0 +1.5	27.67 +.03	22.7 −1.6	36.56 +.06	12.7 +0.5	37.62 +.02	35.4 +2.9
Jan. 9.4	52.84 −.02	36.4 1.3	27.67 −.02	24.2 1.4	36.59 +.01	13.2 0.4	37.56 −.14	38.2 2.7
19.4	52.79 .08	37.6 1.2	27.63 .06	25.5 1.2	36.57 −.04	13.6 0.4	37.34 .29	40.8 2.4
29.4	52.69 .13	38.7 1.0	27.55 .10	26.7 1.0	36.51 .08	14.0 0.3	36.97 .43	43.1 2.1
Feb. 8.3	52.53 .18	39.6 0.7	27.44 .13	27.6 0.8	36.40 .12	14.3 0.3	36.47 .55	45.0 1.7
18.3	52.33 −.21	40.2 +0.4	27.30 −.15	28.2 −0.5	36.26 −.15	14.5 +0.2	35.86 −.65	46.5 +1.2
28.3	52.11 .23	40.5 +0.1	27.13 .17	28.6 −0.3	36.09 .17	14.6 0.0	35.17 .71	47.4 0.7
Mar. 10.2	51.87 .24	40.4 −0.2	26.96 .17	28.8 0.0	35.91 .18	14.6 −0.1	34.45 .73	47.7 +0.1
20.2	51.63 .23	40.1 0.5	26.79 .17	28.7 +0.2	35.73 .18	14.4 0.2	33.71 .72	47.6 −0.4
30.2	51.41 .21	39.5 0.7	26.63 .15	28.3 0.5	35.55 .16	14.1 0.3	33.01 .67	46.9 0.9
Apr. 9.2	51.21 −.18	38.6 −1.0	26.48 −.13	27.7 +0.7	35.40 −.14	13.8 −0.4	32.37 −.60	45.7 −1.4
19.1	51.06 .13	37.6 1.2	26.37 .10	26.9 1.0	35.27 .10	13.4 0.4	31.82 .49	44.0 1.8
29.1	50.95 .08	36.4 1.3	26.28 .06	25.8 1.2	35.19 .06	12.9 0.5	31.39 .37	42.0 2.1
May 9.1	50.90 −.02	35.0 1.3	26.24 −.02	24.5 1.4	35.15 −.02	12.4 0.5	31.10 .22	39.7 2.4
19.1	50.92 +.04	33.7 1 4	26.24 +.02	23.0 1.6	35.16 +.03	12.0 0.4	30.95 −.07	37.2 2.6
29.0	50.99 +.10	32.3 −1.3	26.28 +.06	21.3 +1.7	35.21 +.08	11.6 −0.4	30.95 +.08	34.6 −2.6
June 8.0	51.12 .16	31.1 1.2	26.36 .10	19.5 1.8	35.32 .13	11.3 0.3	31.12 .23	32.0 2.6
18.0	51.32 .22	29.9 1.1	26.49 .14	17.6 1.9	35.47 .17	11.0 0.2	31.43 .38	29.4 2.5
27.9	51.56 .27	28.8 0.9	26.66 .18	15.6 2.0	35.67 .21	10.9 −0.1	31.88 .52	26.9 2.4
July 7.9	51.86 .31	28.0 0.8	26.85 .21	13.7 1.9	35.90 .25	10.9 0.0	32.47 .65	24.7 2.2
17.9	52.19 +.35	27.3 −0.6	27.08 +.24	11.8 +1.8	36.17 +.28	11.0 +0.1	33.18 +.76	22.6 −1.9
27.9	52.56 .38	26.8 0.4	27.33 .26	10.0 1.7	36.46 .30	11.2 0.2	33.99 .85	20.9 1.6
Aug. 6.8	52.95 .40	26.5 −0.2	27.60 .28	8.4 1.5	36.77 .32	11.5 0.3	34.88 .93	19.5 1.2
16.8	53.36 .42	26.4 0.0	27.89 .29	7.0 1.2	37.10 .33	11.8 0.3	35.84 .99	18.4 0.9
26.8	53.78 .43	26.5 +0.2	28.18 .30	5.9 0.9	37.44 .34	12.1 0.4	36.86 1.03	17.7 0.5
Sept. 5.8	54.21 +.43	26.8 +0.4	28.48 +.30	5.2 +0.6	37.79 +.35	12.5 +0.4	37.90+1.06	17.4 −0.1
15.7	54.64 .43	27.2 0.5	28.77 .30	4.7 +0.2	38.13 .35	12.9 0.4	38.97 1.06	17.5 +0.3
25.7	55.06 .42	27.8 0.7	29.07 .29	4.7 −0.1	38.48 .34	13.2 0.4	40.03 1.05	18.0 0.7
Oct. 5.7	55.47 .41	28.6 0.8	29.35 .28	5.0 0.5	38.81 .33	13.6 0.4	41.07 1.02	18.9 1.1
15.6	55.87 .39	29.5 1.0	29.62 .27	5.7 0.8	39.14 .32	13.9 0.3	42.08 .97	20.2 1.4
25.6	56.24 +.36	30.5 +1.1	29.88 +.25	6.7 −1.1	39.45 +.30	14.3 +0.3	43.02 +.91	21.9 +1.8
Nov. 4.6	56.59 .33	31.7 1.2	30.12 .23	8.0 1.4	39.74 .28	14.6 0.3	43.90 .83	23.9 2.1
14.6	56.91 .29	33.0 1.3	30.33 .20	9.5 1.6	40.01 .25	14.9 0.3	44.67 .72	26.2 2.4
24.5	57.18 .25	34.4 1.4	30.51 .17	11.2 1.7	40.25 .22	15.3 0.4	45.33 .59	28.7 2.6
Dec. 4.5	57.41 .20	35.8 1.5	30.66 .13	13.0 1.8	40.45 .18	15.6 0.4	45.86 .45	31.5 2.8
14.5	57.58 +.15	37.3 +1.5	30.78 +.09	14.7 −1.8	40.61 +.14	16.0 +0.4	46.24 +.30	34.3 +2.9
24.5	57.70 .09	38.8 1.5	30.85 .05	16.5 1.7	40.72 .09	16.5 0.4	46.46 +.14	37.3 2.9
34.4	57.75 +.02	40.3 +1.4	30.88 +.01	18.1 −1.5	40.79 +.04	16.9 +0.4	46.51 −.03	40.1 +2.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Orionis.		α Leporis.		ε Orionis.		α Columbæ.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$5^{h}\ 26^{m}$	$-\ 0^{\circ}\ 22'$	$5^{h}\ 28^{m}$	$-17^{\circ}\ 53'$	$5^{h}\ 30^{m}$	$-\ 1^{\circ}\ 15'$	$5^{h}\ 35^{m}$	$-34^{\circ}\ 7'$
	s	″	s	″	s	″	s	″
(Dec. 30.4)	36.52 +.05	34.1 −1.2	4.48 +.03	49.6 −2.1	51.13 +.05	65.3 −1.3	50.15 +.01	47.4 −2.8
Jan. 9.4	36.54 .00	35.3 1.1	4.48 −.02	51.6 1.9	51.15 +.01	66.5 1.2	50.14 −.04	50.1 2.5
19.4	36.52 −.04	36.3 1.0	4.44 .06	53.5 1.7	51.14 −.04	67.6 1.0	50.07 .09	52.5 2.2
29.4	36.46 .08	37.2 0.8	4.36 .10	55.0 1.4	51.08 .08	68.5 0.8	49.95 .14	54.6 1.9
Feb. 8.3	36.37 .11	37.9 0.6	4.24 .13	56.3 1.1	50.99 .11	69.3 0.7	49.80 .18	56.3 1.5
18.3	36.24 −.14	38.5 −0.5	4.10 −.16	57.2 −0.8	50.86 −.14	69.9 −0.5	49.60 −.21	57.6 −1.1
28.3	36.09 .16	38.8 0.3	3.92 .18	57.8 0.4	50.71 .16	70.3 0.3	49.39 .23	58.4 0.6
Mar. 10.3	35.92 .17	39.0 −0.1	3.74 .19	58.1 −0.1	50.54 .17	70.5 −0.1	49.16 .24	58.8 −0.2
20.2	35.75 .16	39.0 +0.1	3.55 .18	58.0 +0.2	50.37 .17	70.5 +0.1	48.92 .23	58.8 +0.3
30.2	35.59 .15	38.9 0.3	3.37 .17	57.6 0.6	50.21 .16	70.3 0.3	48.69 .22	58.3 0.7
Apr. 9.2	35.45 −.13	38.5 +0.4	3.20 −.15	56.9 +0.9	50.07 −.14	69.9 +0.5	48.47 −.20	57.3 +1.1
19.2	35.33 .10	38.0 0.6	3.06 .12	55.8 1.2	49.94 .11	69.4 0.6	48.29 .17	56.0 1.5
29.1	35.24 .07	37.2 0.8	2.95 .09	54.5 1.5	49.85 .07	68.6 0.8	48.13 .14	54.3 1.9
May 9.1	35.19 −.03	36.3 1.0	2.88 .05	52.9 1.7	49.80 −.03	67.7 1.0	48.02 .10	52.2 2.2
19.1	35.18 +.01	35.3 1.1	2.85 −.01	51.1 1.9	49.79 +.01	66.6 1.2	47.95 −.05	49.9 2.5
29.0	35.22 +.05	34.1 +1.3	2.86 +.04	49.1 +2.1	49.82 +.05	65.4 +1.3	47.93 .00	47.3 +2.7
June 8.0	35.29 .10	32.8 1.4	2.92 .08	46.8 2.2	49.89 .09	64.0 1.4	47.95 +.05	44.5 2.8
18.0	35.41 .14	31.3 1.5	3.02 .12	44.5 2.3	50.00 .13	62.6 1.5	48.02 .10	41.6 2.9
28.0	35.57 .17	29.8 1.5	3.16 .16	42.2 2.3	50.15 .17	61.0 1.6	48.14 .14	38.6 2.9
July 7.9	35.76 .20	28.3 1.5	3.34 .19	39.9 2.3	50.34 .20	59.5 1.6	48.31 .18	35.7 2.8
17.9	35.97 +.23	26.8 +1.5	3.55 +.22	37.6 +2.2	50.55 +.23	57.9 +1.5	48.51 +.22	32.9 +2.7
27.9	36.22 .25	25.3 1.4	3.78 .25	35.5 2.0	50.79 .25	56.5 1.4	48.74 .25	30.4 2.5
Aug. 6.8	36.48 .27	24.0 1.2	4.04 .27	33.6 1.7	51.05 .27	55.1 1.3	49.01 .28	28.1 2.1
16.8	36.76 .28	22.9 1.0	4.32 .28	32.0 1.4	51.33 .28	53.9 1.1	49.30 .30	26.1 1.7
26.8	37.05 .29	21.9 0.8	4.61 .29	30.7 1.0	51.62 .29	53.0 0.8	49.61 .31	24.6 1.3
Sept. 5.8	37.35 +.30	21.2 +0.5	4.91 +.30	29.9 +0.6	51.91 +.30	52.3 +0.5	49.92 +.32	23.6 +0.8
15.7	37.65 .30	20.8 +0.3	5.21 .30	29.5 +0.2	52.21 .30	51.9 +0.2	50.25 .33	23.1 +0.2
25.7	37.94 .30	20.7 0.0	5.51 .30	29.5 −0.2	52.51 .30	51.8 −0.1	50.58 .33	23.2 −0.4
Oct. 5.7	38.24 .29	20.9 −0.3	5.80 .29	29.9 0.7	52.80 .29	52.0 0.4	50.90 .32	23.8 0.9
15.7	38.52 .28	21.4 0.6	6.09 .28	30.8 1.1	53.08 .28	52.5 0.7	51.21 .30	25.0 1.4
25.6	38.79 +.26	22.2 −0.9	6.36 +.26	32.2 −1.5	53.36 +.26	53.3 −0.9	51.50 +.28	26.6 −1.9
Nov. 4.6	39.04 .24	23.2 1.1	6.60 .24	33.8 1.8	53.61 .24	54.4 1.1	51.77 .25	28.8 2.3
14.6	39.27 .22	24.3 1.2	6.83 .21	35.8 2.0	53.84 .22	55.6 1.3	52.01 .22	31.3 2.6
24.5	39.48 .19	25.6 1.3	7.03 .18	37.9 2.2	54.05 .19	57.0 1.4	52.21 .18	34.1 2.8
Dec. 4.5	39.65 .16	27.0 1.4	7.19 .14	40.2 2.3	54.23 .16	58.4 1.4	52.37 .14	37.0 3.0
14.5	39.79 +.12	28.4 −1.4	7.31 +.10	42.6 −2.3	54.37 +.12	59.9 −1.4	52.49 +.09	40.0 −3.0
24.5	39.88 .08	29.8 1.3	7.39 .06	44.9 2.2	54.47 .08	61.3 1.4	52.56 +.04	43.0 2.9
34.4	39.94 +.03	31.1 −1.2	7.43 +.01	47.0 −2.0	54.53 +.04	62.6 −1.3	52.57 −.01	45.8 −2.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Orionis.		ν Orionis.		22 Camelop. (H.)		μ Geminorum.	
	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.	Right Ascension.	Declination North.
	h m 5 49	° ′ + 7 23	h m 6 1	° ′ +14 46	h m 6 7	° ′ +69 21	h m 6 16	° ′ +22 34
	s	″	s	″	s	″	s	″
(Dec. 30.5)	27.05 +.07	20.3 −0.9	32.37 +.09	58.3 −0.5	13.01 +.17	32.9 +2.6	34.09 +.11	10.8 0.0
Jan. 9.5	27.10 +.03	19.4 0.8	32.44 +.04	57.9 0.4	13.11 +.03	35.5 2.6	34.18 .06	10.9 +0.1
19.4	27.11 −.02	18.7 0.7	32.46 .00	57.5 0.3	13.08 −.09	38.1 2.5	34.22 +.01	11.0 0.1
29.4	27.07 .06	18.1 0.5	32.43 −.05	57.3 0.2	12.93 .21	40.4 2.2	34.21 −.04	11.1 0.2
Feb. 8.4	26.99 .10	17.7 0.4	32.36 .09	57.1 0.2	12.66 .31	42.5 1.9	34.15 .08	11.3 0.2
18.3	26.88 −.13	17.3 −0.3	32.25 −.12	57.0 −0.1	12.30 −.40	44.2 +1.5	34.04 −.12	11.5 +0.2
28.3	26.74 .15	17.1 0.2	32.12 .15	57.0 0.0	11.86 .47	45.6 1.1	33.91 .15	11.7 0.2
Mar. 10.3	26.58 .16	16.9 −0.1	31.96 .16	56.9 0.0	11.37 .51	46.4 0.6	33.75 .17	11.9 0.1
20.3	26.41 .17	16.9 0.0	31.79 .17	56.9 0.0	10.85 .52	46.7 +0.1	33.58 .17	12.0 +0.1
30.2	26.25 .16	17.0 +0.1	31.62 .16	57.0 0.0	10.33 .51	46.6 −0.4	33.40 .17	12.0 0.0
Apr. 9.2	26.10 −.14	17.1 +0.2	31.47 −.14	57.0 +0.1	9.83 −.47	45.9 −0.9	33.24 −.15	12.0 0.0
19.2	25.97 .11	17.4 0.3	31.34 .12	57.1 0.1	9.39 .41	44.8 1.3	33.09 .13	12.0 −0.1
29.2	25.87 .08	17.8 0.4	31.23 .09	57.2 0.2	9.02 .33	43.3 1.7	32.98 .10	11.9 0.1
May 9.1	25.81 −.04	18.3 0.6	31.16 .05	57.5 0.2	8.74 .23	41.5 2.0	32.90 .06	11.8 0.1
19.1	25.79 .00	18.9 0.7	31.13 −.01	57.7 0.3	8.56 .13	39.3 2.2	32.86 −.02	11.7 0.1
29.1	25.81 +.04	19.7 +0.8	31.15 +.04	58.0 +0.3	8.49 −.02	37.0 −2.4	32.86 +.02	11.6 −0.1
June 8.0	25.87 .08	20.5 0.9	31.21 .08	58.4 0.4	8.53 +.09	34.6 2.5	32.91 .07	11.5 0.0
18.0	25.98 .12	21.4 1.0	31.30 .12	58.9 0.5	8.68 .20	32.1 2.5	33.00 .11	11.5 0.0
28.0	26.12 .16	22.4 1.0	31.44 .16	59.4 0.6	8.94 .31	29.7 2.4	33.13 .15	11.5 0.0
July 8.0	26.30 .19	23.5 1.0	31.62 .19	60.0 0.6	9.30 .41	27.4 2.3	33.30 .19	11.5 +0.1
17.9	26.50 +.22	24.5 +1.0	31.82 +.22	60.6 +0.6	9.75 +.49	25.2 −2.1	33.50 +.22	11.6 +0.1
27.9	26.74 .24	25.5 1.0	32.06 .25	61.2 0.6	10.29 .57	23.1 1.9	33.74 .25	11.7 0.1
Aug. 6.9	27.00 .26	26.5 0.9	32.31 .27	61.7 0.5	10.90 .64	21.4 1.6	34.00 .27	11.9 0.1
16.9	27.27 .28	27.3 0.8	32.59 .29	62.3 0.5	11.57 .70	19.9 1.3	34.28 .29	12.0 +0.1
26.8	27.56 .29	28.0 0.6	32.88 .30	62.7 0.4	12.29 .74	18.7 1.0	34.58 .31	12.0 0.0
Sept. 5.8	27.85 +.30	28.5 +0.4	33.19 +.31	63.0 +0.2	13.05 +.77	17.8 −0.7	34.89 +.32	12.0 0.0
15.8	28.16 .30	28.8 +0.2	33.49 .31	63.2 +0.1	13.84 .79	17.3 −0.4	35.21 .33	12.0 −0.1
25.7	28.46 .30	28.9 0.0	33.81 .32	63.2 −0.1	14.64 .80	17.1 0.0	35.54 .33	11.9 0.1
Oct. 5.7	28.76 .30	28.7 −0.3	34.13 .31	63.0 0.2	15.44 .80	17.3 +0.4	35.87 .33	11.7 0.2
15.7	29.06 .29	28.4 0.5	34.44 .31	62.7 0.4	16.23 .78	17.9 0.7	36.21 .33	11.4 0.3
25.7	29.35 +.28	27.8 −0.6	34.74 +.30	62.3 −0.5	17.00 +.75	18.8 +1.1	36.53 +.32	11.1 −0.3
Nov. 4.6	29.63 .26	27.0 0.8	35.03 .28	61.8 0.6	17.73 .70	20.0 1.4	36.85 .31	10.8 0.3
14.6	29.88 .24	26.1 0.9	35.31 .26	61.2 0.6	18.41 .64	21.7 1.8	37.15 .29	10.4 0.3
24.6	30.11 .22	25.2 1.0	35.56 .24	60.5 0.7	19.01 .56	23.6 2.1	37.42 .26	10.1 0.3
Dec. 4.6	30.31 .19	24.2 1.0	35.78 .21	59.9 0.6	19.53 .47	25.8 2.3	37.67 .23	9.8 0.3
14.5	30.48 +.15	23.1 −1.0	35.97 +.17	59.3 −0.6	19.95 +.36	28.2 +2.5	37.88 +.19	9.6 −0.2
24.5	30.61 .10	22.2 0.9	36.11 .12	58.7 0.5	20.25 .24	30.7 2.6	38.05 .15	9.4 −0.1
34.5	30.69 +.06	21.2 −0.6	36.21 +.08	58.2 −0.5	20.43 +.11	33.4 +2.6	38.17 +.10	9.4 0.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Argûs. (*Canopus.*)		γ Geminorum.		α Canis Majoris. (*Sirius.*)		ε Canis Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 6 21	° ′ −52 37	h m 6 31	° ′ +16 29	h m 6 40	° ′ −16 33	h m 6 54	° ′ −28 49
	s	″	s	″	s	″	s	″
(Dec. 30.5)	38.07 +.02	69.6 −3.5	36.47 +.13	29.0 −0.4	29.94 +.10	67.3 −2.4	28.91 +.10	33.4 −2.9
Jan. 9.5	38.05 −.05	73.0 3.3	36.57 .08	28.6 0.3	30.02 +.05	69.7 2.2	28.99 +.05	36.3 2.8
19.4	37.96 .12	76.2 3.0	36.62 +.03	28.3 0.2	30.05 .00	71.8 2.0	29.01 .00	39.1 2.6
29.4	37.81 .18	79.1 2.7	36.62 −.02	28.1 0.1	30.03 −.04	73.7 1.8	28.98 −.05	41.6 2.3
Feb. 8.4	37.59 .24	81.6 2.3	36.58 .07	28.0 −0.1	29.96 .09	75.4 1.5	28.90 .10	43.8 2.0
18.4	37.32 −.29	83.6 −1.8	36.49 −.11	28.0 0.0	29.85 −.13	76.8 −1.2	28.78 −.14	45.6 −1.7
28.3	37.01 .32	85.2 1.3	36.36 .14	28.0 0.0	29.71 .15	77.9 0.9	28.62 .17	47.1 1.3
Mar. 10.3	36.67 .35	86.2 0.8	36.21 .16	28.1 +0.1	29.54 .17	78.6 0.6	28.44 .19	48.2 0.9
20.3	36.32 .36	86.8 −0.3	36.05 .17	28.2 0.1	29.36 .18	79.0 −0.3	28.23 .21	48.9 0.5
30.3	35.96 .35	86.8 +0.2	35.88 .16	28.3 0.1	29.18 .18	79.1 +0.1	28.02 .21	49.1 −0.1
Apr. 9.2	35.61 −.33	86.3 +0.7	35.72 −.15	28.4 +0.1	29.00 −.17	78.9 +0.4	27.81 −.20	49.0 +0.3
19.2	35.29 .31	85.3 1.2	35.57 .13	28.5 0.1	28.83 .16	78.4 0.7	27.61 .19	48.4 0.7
29.2	35.00 .27	83.8 1.7	35.45 .10	28.6 0.1	28.68 .13	77.5 1.0	27.43 .16	47.5 1.1
May 9.1	34.74 .23	81.9 2.1	35.37 .07	28.8 0.2	28.57 .10	76.4 1.2	27.29 .13	46.2 1.4
19.1	34.54 .18	79.6 2.5	35.32 −.03	28.9 0.2	28.48 .06	75.1 1.5	27.17 .10	44.6 1.7
29.1	34.40 −.12	76.9 +2.8	35.31 +.01	29.1 +0.2	28.44 −.03	73.5 +1.7	27.09 −.06	42.7 +2.0
June 8.1	34.31 −.06	74.0 3.0	35.34 .05	29.4 0.3	28.43 +.01	71.7 1.9	27.05 −.02	40.6 2.2
18.0	34.28 .00	70.9 3.2	35.41 .09	29.7 0.3	28.46 .05	69.7 2.0	27.05 +.02	38.2 2.4
28.0	34.31 +.06	67.6 3.3	35.52 .13	30.0 0.3	28.54 .09	67.7 2.1	27.10 .06	35.7 2.5
July 8.0	34.40 .12	64.4 3.2	35.67 .16	30.4 0.4	28.64 .13	65.6 2.1	27.18 .10	33.2 2.6
18.0	34.55 +.18	61.2 +3.1	35.85 +.20	30.7 +0.4	28.79 +.16	63.6 +2.0	27.30 +.14	30.6 +2.5
27.9	34.76 .23	58.1 2.9	36.06 .23	31.1 0.4	28.96 .19	61.6 1.9	27.46 .18	28.1 2.4
Aug. 6.9	35.02 .28	55.3 2.6	36.30 .25	31.4 0.3	29.16 .22	59.8 1.7	27.66 .21	25.8 2.2
16.9	35.32 .32	52.9 2.2	36.56 .27	31.7 0.2	29.39 .24	58.2 1.4	27.88 .24	23.8 1.9
26.8	35.66 .35	50.8 1.8	36.84 .29	31.9 +0.1	29.64 .26	56.9 1.1	28.13 .26	22.0 1.5
Sept. 5.8	36.03 +.38	49.3 +1.2	37.13 +.30	32.0 0.0	29.91 +.28	56.0 +0.8	28.40 +.28	20.7 +1.1
15.8	36.42 .40	48.4 +0.6	37.44 .31	31.9 −0.1	30.20 .29	55.4 +0.4	28.69 .30	19.8 0.6
25.8	36.83 .41	48.1 0.0	37.76 .32	31.8 0.2	30.49 .30	55.3 −0.1	29.00 .31	19.5 +0.1
Oct. 5.7	37.24 .41	48.4 −0.6	38.07 .32	31.5 0.4	30.79 .30	55.6 0.5	29.32 .32	19.6 −0.4
15.7	37.65 .40	49.3 1.3	38.40 .32	31.0 0.5	31.09 .30	56.3 1.0	29.64 .32	20.3 0.9
25.7	38.04 +.38	50.9 −1.9	38.71 +.31	30.4 −0.6	31.39 +.29	57.5 −1.4	29.96 +.32	21.5 −1.4
Nov. 4.7	38.41 .35	53.1 2.4	39.02 .30	29.8 0.7	31.69 .28	59.1 1.7	30.27 .31	23.2 1.9
14.6	38.74 .31	55.7 2.8	39.32 .29	29.1 0.7	31.96 .27	61.0 2.0	30.57 .29	25.4 2.3
24.6	39.03 .26	58.8 3.2	39.60 .26	28.4 0.7	32.22 .24	63.1 2.3	30.84 .26	27.9 2.6
Dec. 4.6	39.26 .20	62.1 3.4	39.85 .23	27.7 0.7	32.45 .21	65.5 2.4	31.08 .22	30.6 2.8
14.5	39.42 +.13	65.6 −3.6	40.07 +.20	27.0 −0.6	32.64 +.17	68.0 −2.5	31.29 +.18	33.6 −3.0
24.5	39.52 +.06	69.2 3.6	40.24 .16	26.4 0.5	32.79 .13	70.5 2.5	31.45 .14	36.6 3.0
34.5	39.55 −.01	72.7 −3.5	40.37 +.11	25.9 −0.4	32.90 +.09	72.9 −2.4	31.56 +.09	39.5 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Canis Majoris.		δ Geminorum.		Piazzi vii. 67.		α² Geminorum. (*Castor*.)	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.
	h m 7 4	° ′ −26 13	h m 7 13	° ′ +22 10	h m 7 19	° ′ +68 40	h m 7 27	° ′ +32 7
	s	″	s	″	s	″	s	″
(Dec. 30.5)	6.10 +.12	21.9 −2.9	48.80 +.17	43.4 −0.2	54.83 +.35	58.1 +2.4	51.67 +.20	19.6 +0.3
Jan. 9.5	6.19 .07	24.7 2.8	48.95 .12	43.3 −0.1	55.12 .23	60.5 2.5	51.85 .15	20.0 0.5
19.5	6.23 +.01	27.4 2.6	49.05 .07	43.3 +0.1	55.28 +.10	63.1 2.6	51.97 .09	20.5 0.6
29.4	6.22 −.04	29.8 2.3	49.09 +.02	43.4 0.2	55.32 −.03	65.7 2.5	52.03 +.03	21.2 0.7
Feb. 8.4	6.16 .08	32.0 2.0	49.08 −.03	43.6 0.2	55.23 .15	68.1 2.4	52.03 −.03	22.0 0.8
18.4	6.05 −.12	33.8 −1.7	49.02 −.08	43.9 +0.3	55.02 −.26	70.4 +2.1	51.98 −.08	22.8 +0.8
28.4	5.91 .16	35.3 1.3	48.92 .12	44.2 0.3	54.71 .35	72.4 1.8	51.88 .12	23.6 0.7
Mar. 10.3	5.73 .18	36.4 0.9	48.79 .15	44.5 0.3	54.32 .42	74.0 1.4	51.74 .15	24.3 0.6
20.3	5.54 .20	37.2 0.5	48.63 .16	44.9 0.3	53.87 .47	75.2 1.0	51.57 .17	24.9 0.5
30.3	5.34 .20	37.5 −0.1	48.46 .17	45.1 0.2	53.38 .49	76.0 +0.5	51.39 .18	25.4 0.4
Apr. 9.3	5.13 −.20	37.4 +0.3	48.30 −.16	45.3 +0.2	52.89 −.49	76.2 0.0	51.21 −.18	25.7 +0.2
19.2	4.94 .18	37.0 0.6	48.14 .16	45.5 0.1	52.41 .46	75.9 −0.5	51.03 .17	25.9 +0.1
29.2	4.77 .16	36.1 1.0	48.00 .13	45.6 +0.1	51.97 .41	75.2 1.0	50.87 .15	25.8 −0.1
May 9.2	4.62 .13	35.0 1.3	47.88 .10	45.6 0.0	51.58 .35	74.0 1.4	50.74 .12	25.7 0.2
19.1	4.51 .10	33.5 1.6	47.80 .06	45.6 0.0	51.27 .27	72.5 1.7	50.64 .08	25.4 0.4
29.1	4.43 −.06	31.7 +1.9	47.76 −.02	45.6 −0.1	51.05 −.18	70.6 −2.0	50.58 −.04	24.9 −0.5
June 8.1	4.39 −.02	29.7 2.1	47.76 +.02	45.5 0.1	50.92 −.08	68.4 2.3	50.56 .00	24.4 0.6
18.1	4.39 +.02	27.5 2.3	47.79 .06	45.4 0.1	50.89 +.02	66.0 2.4	50.58 +.04	23.8 0.7
28.0	4.43 .06	25.1 2.4	47.87 .09	45.3 0.1	50.96 .12	63.5 2.5	50.65 .09	23.1 0.7
July 8.0	4.50 .10	22.7 2.4	47.98 .13	45.2 0.1	51.13 .22	61.0 2.6	50.76 .13	22.3 0.8
18.0	4.62 +.13	20.3 +2.4	48.13 +.16	45.1 −0.1	51.39 +.31	58.4 −2.6	50.90 +.16	21.6 −0.8
28.0	4.77 .17	17.9 2.3	48.31 .19	44.9 0.2	51.74 .40	55.8 2.5	51.08 .20	20.8 0.8
Aug. 6.9	4.95 .20	15.7 2.1	48.52 .22	44.7 0.2	52.18 .48	53.4 2.4	51.30 .23	20.0 0.8
16.9	5.16 .23	13.7 1.8	48.76 .25	44.5 0.3	52.70 .55	51.0 2.2	51.54 .26	19.1 0.8
26.9	5.40 .25	12.0 1.5	49.02 .27	44.2 0.3	53.28 .61	48.9 2.0	51.81 .28	18.3 0.8
Sept. 5.8	5.67 +.27	10.7 +1.1	49.30 +.29	43.8 −0.4	53.92 +.67	47.1 −1.7	52.11 +.31	17.5 −0.9
15.8	5.95 .29	9.9 0.6	49.60 .31	43.4 0.5	54.61 .71	45.4 1.5	52.42 .33	16.6 0.9
25.8	6.25 .30	9.5 +0.1	49.91 .32	42.9 0.6	55.34 .75	44.1 1.2	52.76 .34	15.8 0.9
Oct. 5.8	6.56 .31	9.6 −0.4	50.24 .33	42.2 0.7	56.10 .77	43.2 0.8	53.11 .36	14.9 0.8
15.7	6.88 .32	10.3 0.9	50.57 .34	41.5 0.7	56.88 .78	42.6 −0.4	53.47 .37	14.1 0.8
25.7	7.20 +.32	11.4 −1.4	50.91 +.34	40.8 −0.8	57.67 +.77	42.3 0.0	53.84 +.37	13.3 −0.7
Nov. 4.7	7.51 .31	13.0 1.8	51.25 .33	40.0 0.8	58.45 .76	42.5 +0.4	54.21 .37	12.6 0.6
14.7	7.81 .29	15.1 2.2	51.58 .32	39.2 0.8	59.20 .73	43.1 0.8	54.58 .36	12.0 0.5
24.6	8.09 .26	17.5 2.5	51.89 .30	38.5 0.7	59.91 .68	44.1 1.2	54.93 .34	11.6 0.4
Dec. 4.6	8.34 .23	20.2 2.7	52.19 .28	37.8 0.6	60.56 .61	45.5 1.6	55.26 .31	11.3 −0.2
14.6	8.56 +.19	23.0 −2.8	52.45 +.25	37.3 −0.5	61.13 +.52	47.2 +1.9	55.55 +.27	11.2 0.0
24.5	8.73 .15	25.9 2.9	52.68 .20	36.8 0.4	61.61 .42	49.3 2.2	55.81 .23	11.2 +0.2
34.5	8.85 +.10	28.9 −2.9	52.86 +.15	36.5 −0.2	61.97 +.30	51.6 +2.4	56.02 +.18	11.5 +0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Canis Minoris. (*Procyon.*)		β Geminorum. (*Pollux.*)		φ Geminorum.		3 Ursæ Majoris (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$7^{\mathrm{h}}\ 33^{\mathrm{m}}$	$+5^{\circ}\ 29'$	$7^{\mathrm{h}}\ 38^{\mathrm{m}}$	$+28^{\circ}\ 16'$	$7^{\mathrm{h}}\ 47^{\mathrm{m}}$	$+27^{\circ}\ 2'$	$8^{\mathrm{h}}\ 2^{\mathrm{m}}$	$+68^{\circ}\ 46'$
	s	″	s	″	s	″	s	″
(Dec. 30.5)	46.35 +.17	53.4 −1.4	51.13 +.21	59.1 0.0	1.93 +.21	27.7 −0.1	19.75 +.45	68.3 +2.0
Jan. 9.5	46.50 .13	52.1 1.2	51.31 .15	59.2 +0.2	2.12 .16	27.7 +0.1	20.15 .33	70.5 2.3
19.5	46.60 .08	50.9 1.1	51.43 .10	59.5 0.4	2.25 .11	27.9 0.3	20.42 .21	73.0 2.5
29.5	46.65 +.03	50.0 0.9	51.50 +.04	60.0 0.5	2.33 +.05	28.3 0.4	20.57 +.08	75.6 2.6
Feb. 8.4	46.65 −.02	49.2 0.7	51.52 −.01	60.5 0.6	2.36 .00	28.7 0.5	20.58 −.07	78.1 2.5
18.4	46.61 −.06	48.6 −0.5	51.48 −.06	61.1 +0.6	2.33 −.05	29.3 +0.6	20.47 −.17	80.6 +2.4
28.4	46.52 .10	48.1 0.3	51.39 .11	61.8 0.6	2.25 .10	29.9 0.6	20.25 .27	82.9 2.2
Mar. 10.3	46.41 .13	47.9 0.2	51.26 .14	62.4 0.6	2.13 .13	30.5 0.6	19.93 .36	85.0 1.8
20.3	46.27 .15	47.8 −0.1	51.11 .16	63.0 0.5	1.99 .15	31.1 0.5	19.53 .43	86.6 1.4
30.3	46.11 .16	47.8 +0.1	50.94 .17	63.5 0.4	1.82 .17	31.6 0.4	19.07 .47	87.9 1.0
Apr. 9.3	45.95 −.15	47.9 +0.2	50.76 −.17	63.8 +0.3	1.65 −.17	32.0 +0.3	18.59 −.48	88.6 +0.5
19.2	45.80 .14	48.1 0.3	50.59 .16	64.1 +0.2	1.48 .16	32.3 0.2	18.10 .49	88.9 0.0
29.2	45.66 .13	48.5 0.4	50.44 .14	64.2 0.0	1.33 .14	32.4 +0.1	17.63 .45	88.6 −0.5
May 9.2	45.55 .10	48.9 0.5	50.31 .11	64.2 −0.1	1.20 .12	32.5 0.0	17.20 .40	87.9 0.9
19.2	45.46 .07	49.4 0.5	50.21 .08	64.0 0.2	1.10 .09	32.4 −0.1	16.83 .34	86.8 1.3
29.1	45.40 −.04	50.0 +0.6	50.14 −.05	63.7 −0.3	1.03 −.05	32.2 −0.2	16.52 −.26	85.2 −1.7
June 8.1	45.38 −.01	50.6 0.7	50.11 −.01	63.4 0.4	0.99 −.01	31.9 0.3	16.30 .18	83.3 2.1
18.1	45.39 +.03	51.4 0.7	50.12 +.03	63.0 0.5	1.00 +.02	31.6 0.4	16.17 −.09	81.1 2.3
28.0	45.43 .06	52.1 0.8	50.18 .07	62.5 0.5	1.05 .06	31.2 0.4	16.13 +.01	78.6 2.5
July 8.0	45.51 .10	52.9 0.8	50.27 .11	62.0 0.5	1.13 .10	30.7 0.5	16.19 .10	76.0 2.7
18.0	45.63 +.13	53.6 +0.7	50.40 +.15	61.4 −0.6	1.25 +.14	30.2 −0.5	16.34 +.20	73.3 −2.7
28.0	45.77 .16	54.3 0.7	50.56 .18	60.8 0.6	1.40 .17	29.6 0.6	16.59 .29	70.6 2.7
Aug. 6.9	45.94 .18	55.0 0.6	50.75 .21	60.1 0.7	1.59 .20	29.0 0.6	16.92 .37	67.8 2.7
16.9	46.14 .21	55.5 0.4	50.97 .24	59.5 0.7	1.80 .23	28.3 0.7	17.33 .45	65.2 2.6
26.9	46.36 .23	55.8 +0.2	51.23 .26	58.7 0.8	2.04 .25	27.6 0.8	17.82 .52	62.6 2.5
Sept. 5.9	46.60 +.25	56.0 0.0	51.50 +.29	58.0 −0.8	2.31 +.28	26.8 −0.8	18.38 +.59	60.2 −2.3
15.8	46.86 .27	55.9 −0.2	51.80 .31	57.1 0.8	2.60 .30	26.0 0.9	19.01 .65	58.0 2.0
25.8	47.14 .29	55.6 0.4	52.11 .33	56.3 0.9	2.91 .32	25.1 0.9	19.68 .70	56.1 1.7
Oct. 5.8	47.44 .30	55.0 0.7	52.45 .34	55.4 0.9	3.24 .34	24.1 1.0	20.40 .74	54.5 1.4
15.7	47.74 .31	54.2 0.9	52.79 .35	54.4 0.9	3.58 .35	23.2 1.0	21.16 .77	53.2 1.1
25.7	48.06 +.31	53.2 −1.1	53.15 +.36	53.5 −0.9	3.93 +.35	22.2 −1.0	21.94 +.78	52.3 −0.7
Nov. 4.7	48.37 .31	52.0 1.3	53.51 .36	52.6 0.8	4.29 .36	21.2 0.9	22.73 .78	51.8 −0.3
14.7	48.68 .30	50.6 1.4	53.86 .35	51.8 0.7	4.64 .35	20.3 0.8	23.51 .77	51.8 +0.2
24.6	48.98 .29	49.1 1.5	54.21 .33	51.2 0.6	4.99 .34	19.5 0.7	24.27 .74	52.2 0.6
Dec. 4.6	49.26 .27	47.5 1.6	54.53 .31	50.6 0.5	5.32 .31	18.8 0.6	24.98 .68	53.0 1.0
14.6	49.52 +.24	45.9 −1.5	54.83 +.28	50.2 −0.3	5.62 +.28	18.3 −0.4	25.63 +.61	54.3 +1.5
24.6	49.74 .20	44.4 1.5	55.09 .24	50.0 −0.1	5.88 .24	18.0 −0.2	26.20 .51	56.0 1.9
34.5	49.92 +.16	43.0 −1.4	55.30 +.19	50.0 +0.1	6.10 +.20	17.8 0.0	26.66 +.41	58.0 +2.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	15 Argûs (ρ)		η Cancri.		ε Hydræ.		ι Ursæ Majoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	8h 3m	−23° 59′	8h 26m	+20° 47′	8h 41m	+ 6° 48′	8h 51m	+48° 27′
	s	″	s	″	s	″	s	″
(Dec. 30.6)	2.84 +.18	46.4 −2.9	35.94 +.24	66.4 −0.7	10.75 +.24	31.5 −1.5	58.79 +.35	24.8 +0.7
Jan. 9.5	3.00 .13	49.2 2.8	36.16 .19	65.8 0.4	10.97 .19	30.1 1.3	59.11 .28	25.7 1.0
19.5	3.10 .06	52.0 2.7	36.33 .14	65.5 −0.2	11.14 .14	28.9 1.1	59.36 .22	26.9 1.3
29.5	3.16 +.03	54.7 2.5	36.45 .09	65.3 0.0	11.26 .09	27.8 0.9	59.54 .15	28.3 1.5
Feb. 8.5	3.16 −.02	57.0 2.3	36.51 +.04	65.4 +0.1	11.32 +.04	27.0 0.7	59.65 +.07	29.9 1.7
18.4	3.11 −.07	59.2 −2.0	36.52 −.01	65.6 +0.3	11.34 .00	26.4 −0.5	59.68 .00	31.7 +1.8
28.4	3.02 .11	61.0 1.6	36.48 .06	66.0 0.4	11.32 −.05	26.0 0.3	59.65 −.06	33.5 1.8
Mar. 10.4	2.89 .14	62.4 1.3	36.40 .10	66.5 0.5	11.25 .09	25.7 −0.2	59.55 .12	35.2 1.7
20.4	2.73 .17	63.5 0.9	36.28 .13	66.9 0.5	11.15 .12	25.7 0.0	59.40 .17	36.8 1.5
30.3	2.56 .18	64.3 0.6	36.15 .14	67.4 0.5	11.02 .13	25.8 +0.1	59.21 .20	38.2 1.3
Apr. 9.3	2.37 −.18	64.7 −0.2	36.00 −.15	67.9 +0.5	10.89 −.14	25.9 +0.2	59.00 −.22	39.3 +1.0
19.3	2.19 .18	64.7 +0.2	35.84 .15	68.3 0.4	10.75 .14	26.2 0.3	58.77 .23	40.1 0.7
29.3	2.02 .17	64.3 0.5	35.70 .14	68.7 0.3	10.61 .13	26.6 0.4	58.54 .22	40.6 +0.3
May 9.2	1.86 .15	63.6 0.8	35.56 .12	69.0 0.3	10.48 .12	27.0 0.4	58.32 .21	40.8 0.0
19.2	1.72 .12	62.6 1.1	35.45 .10	69.2 0.2	10.37 .10	27.5 0.5	58.12 .18	40.6 −0.4
29.2	1.62 −.09	61.3 +1.4	35.36 −.07	69.3 +0.1	10.28 −.08	28.0 +0.5	57.96 −.15	40.0 −0.7
June 8.1	1.54 .06	59.8 1.7	35.31 .04	69.4 0.0	10.22 .05	28.5 0.6	57.83 .11	39.2 1.0
18.1	1.49 −.03	58.0 1.9	35.28 −.01	69.4 −0.1	10.18 −.02	29.1 0.6	57.74 .07	38.0 1.3
28.1	1.48 +.01	56.0 2.0	35.29 +.02	69.3 0.1	10.18 +.01	29.6 0.6	57.70 −.02	36.6 1.5
July 8.1	1.51 .04	53.9 2.1	35.33 .06	69.1 0.2	10.20 .04	30.2 0.5	57.70 +.02	35.0 1.7
18.0	1.57 +.08	51.8 +2.1	35.41 +.09	68.9 −0.3	10.25 +.07	30.7 +0.5	57.75 +.07	33.2 −1.9
28.0	1.66 .11	49.6 2.1	35.51 .12	68.6 0.4	10.33 .10	31.2 0.4	57.84 .12	31.3 2.0
Aug. 7.0	1.79 .14	47.5 2.0	35.65 .15	68.2 0.5	10.44 .12	31.5 0.3	57.98 .16	29.3 2.1
17.0	1.95 .17	45.6 1.8	35.81 .18	67.6 0.6	10.58 .15	31.8 +0.2	58.16 .20	27.2 2.1
26.9	2.14 .20	43.9 1.5	36.01 .21	67.0 0.7	10.75 .18	31.9 0.0	58.39 .24	25.0 2.2
Sept. 5.9	2.35 +.23	42.6 +1.2	36.23 +.23	66.3 −0.8	10.94 +.21	31.8 −0.2	58.65 +.28	22.8 −2.2
15.9	2.60 .26	41.6 0.8	36.48 .26	65.4 0.9	11.16 .23	31.5 0.4	58.95 .32	20.7 2.1
25.8	2.87 .28	41.0 +0.4	36.75 .28	64.5 1.0	11.40 .26	31.0 0.6	59.29 .36	18.6 2.0
Oct. 5.8	3.16 .30	40.9 −0.1	37.04 .30	63.3 1.1	11.67 .28	30.3 0.9	59.67 .39	16.6 1.9
15.8	3.47 .32	41.3 0.6	37.36 .32	62.1 1.2	11.96 .30	29.3 1.1	60.07 .42	14.7 1.8
25.8	3.79 +.32	42.2 −1.1	37.69 +.34	60.9 −1.3	12.27 +.31	28.1 −1.3	60.51 +.44	13.1 −1.6
Nov. 4.7	4.12 .33	43.5 1.6	38.03 .35	59.5 1.3	12.59 .32	26.6 1.5	60.96 .46	11.6 1.3
14.7	4.44 .32	45.3 2.0	38.38 .35	58.2 1.3	12.91 .33	25.1 1.6	61.42 .47	10.5 1.0
24.7	4.76 .30	47.5 2.4	38.72 .34	56.9 1.2	13.24 .32	23.4 1.7	61.89 .46	9.6 0.7
Dec. 4.7	5.05 .28	50.1 2.6	39.06 .32	55.7 1.1	13.56 .31	21.7 1.7	62.35 .44	9.1 −0.3
14.6	5.32 +.25	52.8 −2.8	39.37 +.30	54.6 −1.0	13.86 +.29	19.9 −1.7	62.78 +.42	9.0 +0.1
24.6	5.55 .21	55.7 2.9	39.66 .27	53.7 0.8	14.14 .26	18.2 1.6	63.18 .38	9.2 0.4
34.6	5.74 +.17	58.6 −2.9	39.90 +.23	53.0 −0.7	14.38 +.22	16.7 −1.5	63.53 +.32	9.8 +0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ^2 Ursæ Majoris.		κ Cancri.		ι Argûs.		1 Draconis (H.)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 9 1	° ′ +67 33	h m 9 2	° ′ +11 5	h m 9 14	° ′ −58 49	h m 9 21	° ′ +81 47
	s	″	s	″	s	″	s	″
(Dec. 30.6)	7.32 +.55	47.9 +1.4	1.35 +.26	43.9 −1.4	16.19 +.32	31.5 −3.5	67.08+1.36	33.0 +1.8
Jan. 9.6	7.82 .45	49.6 1.9	1.58 .22	42.6 1.2	16.47 .24	35.2 3.7	68.34 1.14	35.0 2.2
19.6	8.22 .34	51.7 2.2	1.78 .17	41.6 1.0	16.68 .16	39.0 3.8	69.36 .87	37.4 2.6
29.5	8.50 .22	54.0 2.4	1.92 .12	40.7 0.7	16.80 +.08	42.8 3.8	70.09 .58	40.2 2.8
Feb. 8.5	8.67 +.10	56.5 2.6	2.01 .07	40.1 0.5	16.83 .00	46.6 3.7	70.51+ .27	43.1 3.0
18.5	8.70 −.02	59.1 +2.6	2.05 +.02	39.8 −0.3	16.79 −.08	50.3 −3.5	70.62− .04	46.2 +3.0
28.4	8.62 .13	61.7 2.5	2.05 −.03	39.6 −0.1	16.67 .15	53.7 3.3	70.42 .34	49.1 2.9
Mar. 10.4	8.43 .23	64.1 2.3	2.00 .07	39.5 +0.1	16.48 .22	56.8 3.0	69.94 .61	51.9 2.7
20.4	8.16 .31	66.3 2.0	1.91 .10	39.7 0.2	16.24 .27	59.6 2.6	69.19 .85	54.4 2.3
30.4	7.80 .38	68.1 1.6	1.80 .12	39.9 0.3	15.95 .31	61.9 2.1	68.23 1.04	56.6 1.9
Apr. 9.3	7.40 −.42	69.5 +1.2	1.68 −.13	40.2 +0.4	15.62 −.34	63.8 −1.6	67.10−1.19	58.3 +1.4
19.3	6.96 .44	70.5 0.7	1.54 .14	40.6 0.4	15.27 .35	65.2 1.1	65.86 1.28	59.5 0.9
29.3	6.51 .44	71.0 +0.2	1.40 .13	41.0 0.4	14.91 .36	66.1 0.6	64.55 1.31	60.1 +0.3
May 9.3	6.08 .42	71.0 −0.2	1.27 .12	41.5 0.4	14.55 .36	66.5 −0.1	63.23 1.30	60.1 −0.2
19.2	5.67 .38	70.5 0.7	1.16 .10	41.9 0.4	14.20 .34	66.4 +0.4	61.95 1.24	59.6 0.8
29.2	5.31 −.33	69.5 −1.2	1.07 −.08	42.3 +0.4	13.87 −.32	65.8 +0.9	60.76−1.13	58.5 −1.3
June 8.2	5.00 .27	68.1 1.6	0.99 .06	42.8 0.4	13.56 .29	64.7 1.4	59.68 .99	57.0 1.8
18.1	4.77 .20	66.3 2.0	0.95 .03	43.1 0.4	13.29 .25	63.1 1.8	58.77 .82	54.9 2.2
28.1	4.61 .12	64.2 2.3	0.93 −.01	43.5 0.3	13.06 .21	61.1 2.2	58.04 .63	52.5 2.6
July 8.1	4.52 −.04	61.8 2.5	0.93 +.02	43.8 0.3	12.88 .16	58.8 2.5	57.52 .42	49.7 2.9
18.1	4.52 +.04	59.2 −2.7	0.97 +.05	44.0 +0.2	12.75 −.10	56.1 +2.7	57.21− .20	46.6 −3.2
28.0	4.60 .12	56.3 2.9	1.04 .08	44.2 +0.1	12.68 −.04	53.3 2.9	57.12+ .03	43.4 3.3
Aug. 7.0	4.77 .20	53.4 2.9	1.13 .11	44.3 0.0	12.68 +.03	50.3 3.0	57.26 .26	40.0 3.4
17.0	5.01 .28	50.5 3.0	1.25 .14	44.2 −0.1	12.74 .09	47.4 2.9	57.64 .48	36.5 3.5
27.0	5.33 .36	47.5 2.9	1.40 .16	44.0 0.3	12.86 .16	44.5 2.8	58.23 .70	33.0 3.5
Sept. 5.9	5.73 +.43	44.6 −2.8	1.58 +.19	43.7 −0.5	13.05 +.23	41.8 +2.5	59.04+ .91	29.7 −3.3
15.9	6.20 .50	41.8 2.7	1.78 .22	43.1 0.7	13.31 .29	39.5 2.2	60.05 1.11	26.4 3.1
25.9	6.74 .57	39.1 2 5	2.02 .25	42.4 0.9	13.64 .35	37.5 1.7	61.25 1.29	23.4 2.9
Oct. 5.8	7.33 .62	36.7 2.3	2.28 .27	41.4 1.1	14.02 .40	36.0 1.2	62.63 1.45	20.6 2.6
15.8	7.98 .67	34.6 2.0	2.56 .29	40.2 1.3	14.45 .45	35.1 +0.6	64.16 1.59	18.2 2.2
25.8	8.67 +.71	32.8 −1.6	2.87 +.31	38.9 −1.4	14.91 +.48	34.8 0.0	65.81+1.70	16.2 −1.8
Nov. 4.8	9.40 .73	31.4 1.2	3.19 .33	37.4 1.6	15.41 .50	35.1 −0.7	67.55 1.77	14.6 1.3
14.7	10.14 .74	30.5 0.8	3.52 .34	35.7 1.7	15.92 .50	36.1 1.3	69.36 1.81	13.6 0.8
24.7	10.89 .74	29.9 −0.3	3.86 .34	34.1 1.7	16.42 .49	37.8 1.9	71.18 1.80	13.1 −0.2
Dec. 4.7	11.62 .71	29.9 +0.2	4.19 .32	32.4 1.7	16.90 .46	40.0 2.5	72.96 1.75	13.1 +0.3
14.7	12.31 +.66	30.4 +0.7	4.51 +.31	30.7 −1.6	17.35 +.42	42.7 −3.0	74.67+1.64	13.7 +0.9
24.6	12.94 .60	31.4 1.2	4.80 .28	29.1 1.5	17.74 .36	45.9 3.3	76.24 1.48	14.9 1.4
34.6	13.50 +.52	32.8 +1.6	5.06 +.24	27.7 −1.3	18.07 +.30	49.4 −3.6	77.63+1.27	16.6 +2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*a* Hydræ.		*d* Ursæ Majoris.		*θ* Ursæ Majoris.		*ε* Leonis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 22	° ′ − 8 11	h m 9 25	° ′ +70 17	h m 9 25	° ′ +52 9	h m 9 39	° ′ +24 15
	s	″	s	″	s	″	s	″
(Dec. 30.6)	23.45 +.25	50.6 −2.3	10.07 +.65	38.1 +1.4	47.82 +.40	31.1 +0.5	51.06 +.31	42.3 −0.9
Jan. 9.6	23.69 .22	52.9 2.2	10.68 .55	39.7 1.5	48.20 .34	31.9 0.9	51.35 .25	41.6 0.6
19.6	23.89 .17	55.1 2.1	11.17 .43	41.7 1.8	48.51 .27	33.0 1.3	51.59 .21	41.1 −0.3
29.5	24.04 .12	57.1 1.9	11.54 .30	44.0 2.2	48.74 .20	34.5 1.6	51.79 .17	40.9 0.0
Feb. 8.5	24.14 .08	58.9 1.7	11.78 .17	46.6 2.6	48.91 .12	36.3 1.8	51.93 .11	41.1 +0.2
18.5	24.19 +.03	60.5 −1.6	11.88 +.03	49.3 +2.7	48.99 +.04	38.2 +2.0	52.01 +.06	41.4 +0.4
28.4	24.19 −.02	61.9 1.2	11.84 −.10	51.9 2.6	49.00 −.03	40.2 2.0	52.05 +.01	42.0 0.6
Mar. 10.4	24.15 .06	62.9 1.0	11.68 .22	54.5 2.5	48.93 .10	42.2 1.9	52.03 −.04	42.7 0.8
20.4	24.08 .09	63.8 0.7	11.41 .32	57.0 2.2	48.80 .15	44.1 1.8	51.97 .08	43.5 0.8
30.4	23.98 .11	64.4 0.5	11.04 .40	59.0 1.9	48.63 .19	45.8 1.6	51.88 .10	44.4 0.9
Apr. 9.3	23.86 −.13	64.7 −0.2	10.61 −.46	60.7 +1.5	48.41 −.23	47.3 +1.3	51.77 −.12	45.2 +0.8
19.3	23.73 .13	64.8 0.0	10.13 .50	62.0 1.0	48.18 .24	48.5 1.0	51.64 .13	46.0 0.7
29.3	23.59 .13	64.7 +0.2	9.62 .51	62.7 +0.5	47.93 .25	49.3 0.6	51.50 .14	46.7 0.6
May 9.3	23.46 .13	64.4 0.4	9.11 .50	63.0 0.0	47.68 .24	49.7 +0.2	51.36 .14	47.3 0.5
19.2	23.34 .11	63.9 0.6	8.62 .47	62.7 −0.5	47.45 .22	49.7 −0.2	51.23 .12	47.8 0.4
29.2	23.24 −.10	63.2 +0.7	8.17 −.42	62.0 −1.0	47.25 −.19	49.4 −0.5	51.11 −.10	48.1 +0.2
June 8.2	23.15 .08	62.4 0.9	7.77 .36	60.7 1.4	47.07 .16	48.7 0.9	51.02 .08	48.2 +0.1
18.1	23.08 .05	61.5 1.0	7.44 .29	59.1 1.9	46.93 .12	47.6 1.2	50.94 .06	48.2 −0.1
28.1	23.04 .03	60.4 1.1	7.19 .21	57.0 2.2	46.83 .08	46.2 1.5	50.89 .04	48.0 0.2
July 8.1	23.02 −.01	59.3 1.1	7.02 .13	54.6 2.5	46.78 −.03	44.5 1.8	50.87 −.01	47.7 0.4
18.1	23.03 +.02	58.1 +1.2	6.94 −.04	52.0 −2.8	46.77 +.02	42.6 −2.0	50.88 +.02	47.2 −0.5
28.0	23.06 .05	57.0 1.1	6.95 +.05	49.1 3.0	46.81 .06	40.5 2.2	50.91 .05	46.6 0.7
Aug. 7.0	23.12 .07	55.8 1.1	7.05 .15	46.0 3.1	46.89 .11	38.2 2.4	50.97 .08	45.9 0.8
17.0	23.21 .10	54.8 1.0	7.24 .24	42.9 3.2	47.03 .16	35.8 2.5	51.06 .11	44.9 1.0
27.0	23.33 .13	54.0 0.8	7.53 .33	39.7 3.2	47.21 .20	33.3 2.5	51.18 .14	43.9 1.2
Sept. 5.9	23.48 +.16	53.3 +0.5	7.90 +.41	36.6 −3.1	47.43 +.25	30.7 −2.6	51.34 +.17	42.6 −1.3
15.9	23.66 .19	52.9 +0.2	8.35 .50	33.5 3.0	47.71 .29	28.2 2.5	51.52 .20	41.3 1.4
25.9	23.87 .22	52.8 −0.1	8.89 .57	30.6 2.8	48.03 .34	25.7 2.5	51.73 .23	39.8 1.6
Oct. 5.8	24.10 .25	53.1 0.4	9.50 .64	27.8 2.6	48.38 .38	23.2 2.4	51.98 .26	38.1 1.7
15.8	24.37 .28	53.7 0.8	10.18 .71	25.4 2.3	48.78 .42	20.9 2.2	52.26 .29	36.4 1.8
25.8	24.66 +.30	54.6 −1.1	10.92 +.76	23.3 −1.9	49.22 +.45	18.8 −2.0	52.57 +.32	34.6 −1.8
Nov. 4.8	24.97 .32	55.9 1.5	11.70 .80	21.6 1.5	49.68 .47	17.0 1.7	52.90 .34	32.7 1.8
14.7	25.29 .33	57.6 1.8	12.52 .82	20.3 1.1	50.17 .49	15.4 1.4	53.25 .36	30.9 1.8
24.7	25.62 .33	59.4 2.0	13.34 .82	19.5 −0.6	50.66 .49	14.2 1.0	53.61 .36	29.2 1.7
Dec. 4.7	25.95 .32	61.6 2.2	14.16 .80	19.2 0.0	51.16 .48	13.4 0.6	53.97 .36	27.5 1.5
14.7	26.27 +.30	63.8 −2.3	14.95 +.76	19.4 +0.5	51.63 +.46	13.0 −0.2	54.33 +.35	26.1 −1.3
24.6	26.56 .28	66.2 2.3	15.69 .70	20.2 1.0	52.08 .43	13.1 +0.3	54.67 .32	24.8 1.1
34.6	26.83 +.24	68.5 −2.3	16.35 +.61	21.4 +1.5	52.49 +.38	13.5 +0.7	54.98 +.29	23.9 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*μ* Leonis.		*α* Leonis. (*Regulus.*)		32 Ursæ Majoris.		*γ*¹ Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 9 46	° ′ +26 30	h m 10 2	° ′ +12 28	h m 10 10	° ′ +65 37	h m 10 14	° ′ +20 22
	s	″	s	″	s	″	s	″
(Dec. 30.6)	45.11 +.32	19.6 −0.8	44.35 +.30	67.1 −1.6	22.81 +.60	62.1 +0.7	8.50 +.32	37.4 −1.3
Jan. 9.6	45.41 .27	19.0 0.5	44.63 .26	65.6 1.3	23.39 .54	63.2 1.1	8.80 .28	36.3 1.0
19.6	45.66 .23	18.6 −0.2	44.88 .22	64.4 1.0	23.89 .46	64.5 1.6	9.07 .24	35.4 0.7
29.6	45.86 .18	18.5 +0.1	45.08 .18	63.4 0.7	24.30 .35	66.3 2.0	9.29 .20	34.9 0.4
Feb. 8.5	46.01 .12	18.7 0.4	45.23 .13	62.7 0.5	24.60 .25	68.5 2.3	9.46 .15	34.6 −0.1
18.5	46.11 +.07	19.2 +0.6	45.34 +.08	62.3 −0.3	24.79 +.14	70.9 +2.5	9.58 +.09	34.7 +0.2
28.5	46.15 +.02	19.9 0.8	45.39 +.03	62.2 −0.1	24.88 +.03	73.5 2.6	9.65 +.04	35.0 0.4
Mar. 10.5	46.14 −.03	20.7 0.9	45.40 −.01	62.2 +0.1	24.85 −.08	76.1 2.6	9.67 .00	35.5 0.6
20.4	46.09 .07	21.7 1.0	45.36 .05	62.4 0.3	24.73 .17	78.7 2.4	9.65 −.04	36.1 0.7
30.4	46.00 .10	22.7 1.0	45.30 .08	62.8 0.4	24.52 .25	81.0 2.2	9.59 .07	36.9 0.8
Apr. 9.4	45.88 −.12	23.6 +0.9	45.21 −.10	63.3 +0.5	24.24 −.31	83.1 +1.9	9.50 −.10	37.7 +0.8
19.3	45.75 .14	24.5 0.8	45.10 .11	63.8 0.5	23.90 .35	84.8 1.5	9.40 .11	38.5 0.8
29.3	45.61 .14	25.3 0.7	44.98 .12	64.3 0.6	23.53 .38	86.1 1.1	9.28 .12	39.3 0.7
May 9.3	45.47 .14	25.9 0.6	44.86 .12	64.9 0.5	23.14 .39	87.0 0.6	9.15 .12	40.0 0.6
19.3	45.34 .13	26.4 0.4	44.74 .11	65.4 0.5	22.75 .38	87.3 +0.1	9.03 .12	40.6 0.5
29.2	45.22 −.11	26.7 +0.2	44.64 −.10	65.9 +0.5	22.37 −.36	87.2 −0.4	8.92 −.11	41.1 +0.4
June 8.2	45.11 .09	26.8 0.0	44.54 .08	66.4 0.4	22.02 .33	86.6 0.9	8.82 .09	41.4 0.3
18.2	45.03 .07	26.7 −0.1	44.47 .07	66.8 0.3	21.71 .29	85.5 1.3	8.73 .08	41.6 +0.1
28.2	44.98 .04	26.5 0.3	44.41 .05	67.1 0.3	21.44 .24	83.9 1.7	8.67 .06	41.7 0.0
July 8.1	44.95 −.02	26.1 0.5	44.37 −.03	67.3 0.2	21.24 .18	82.0 2.1	8.62 .03	41.6 −0.2
18.1	44.95 +.01	25.5 −0.7	44.36 .00	67.4 +0.1	21.09 −.11	79.8 −2.4	8.60 −.01	41.4 −0.3
28.1	44.97 .04	24.8 0.8	44.37 +.02	67.4 0.0	21.01 −.05	77.2 2.7	8.60 +.01	41.0 0.5
Aug. 7.0	45.03 .07	23.9 1.0	44.40 .05	67.3 −0.2	20.99 +.02	74.4 2.9	8.62 .04	40.4 0.7
17.0	45.11 .10	22.8 1.1	44.46 .08	67.0 0.3	21.05 .09	71.3 3.1	8.68 .07	39.6 0.8
27.0	45.22 .13	21.6 1.3	44.55 .10	66.6 0.5	21.17 .16	68.2 3.2	8.76 .10	38.7 1.0
Sept. 6.0	45.37 +.16	20.2 −1.4	44.67 +.13	66.0 −0.7	21.37 +.24	64.9 −3.2	8.87 +.13	37.6 −1.2
15.9	45.55 .20	18.7 1.6	44.82 .16	65.2 0.9	21.65 .31	61.7 3.2	9.02 .16	36.3 1.4
25.9	45.76 .23	17.0 1.7	45.00 .20	64.2 1.1	21.99 .38	58.4 3.2	9.19 .20	34.9 1.5
Oct. 5.9	46.01 .26	15.3 1.8	45.22 .23	63.0 1.3	22.41 .45	55.3 3.0	9.41 .23	33.3 1.7
15.9	46.28 .29	13.4 1.9	45.46 .26	61.6 1.5	22.89 .51	52.4 2.8	9.65 .26	31.5 1.8
25.8	46.59 +.32	11.5 −1.9	45.74 +.29	60.0 −1.7	23.43 +.57	49.7 −2.5	9.93 +.29	29.6 −1.9
Nov. 4.8	46.92 .34	9.6 1.9	46.04 .31	58.2 1.8	24.03 .62	47.3 2.2	10.24 .32	27.6 2.0
14.8	47.28 .36	7.7 1.8	46.37 .33	56.3 1.9	24.67 .66	45.3 1.8	10.57 .34	25.6 2.0
24.7	47.64 .37	5.9 1.7	46.70 .34	54.4 1.9	25.35 .68	43.8 1.3	10.92 .35	23.6 2.0
Dec. 4.7	48.01 .37	4.3 1.5	47.05 .34	52.4 1.9	26.03 .68	42.7 0.8	11.28 .36	21.7 1.9
14.7	48.38 +.35	2.9 −1.3	47.39 +.33	50.6 −1.8	26.71 +.67	42.2 −0.3	11.63 +.35	19.9 −1.7
24.7	48.72 .33	1.7 1.0	47.72 .32	48.8 1.7	27.37 .64	42.2 +0.3	11.98 .33	18.3 1.5
34.6	49.04 +.30	0.8 −0.7	48.02 +.29	47.2 −1.5	27.98 +.58	42.7 +0.8	12.30 +.31	16.9 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	9 Draconis (H.)		ρ Leonis.		η Argûs.		*l* Leonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 10 26	+76° 14′	h m 10 27	+ 9° 50′	h m 10 40	−59° 7′	h m 10 43	+11° 5′
	s	″	s	″	s	″	s	″
(Dec. 30.6)	10.03+1.00	79.2 +0.8	14.42 +.31	67.2 −1.7	57.07 +.46	19.3 −2.9	41.69 +.32	80.9 −1.8
Jan. 9.6	10.99 .89	80.3 1.4	14.71 .28	65.5 1.5	57.50 .40	22.4 3.3	41.99 .29	79.2 1.6
19.6	11.82 .76	82.0 1.9	14.98 .24	64.1 1.3	57.87 .33	25.8 3.5	42.27 .25	77.7 1.3
29.6	12.51 .61	84.0 2.3	15.20 .20	62.9 1.0	58.16 .26	29.5 3.7	42.50 .21	76.6 1.0
Feb. 8.5	13.03 .43	86.5 2.6	15.37 .15	62.0 0.8	58.38 .18	33.2 3.8	42.70 .17	75.7 0.7
18.5	13.37 +.25	89.2 +2.8	15.50 +.10	61.4 −0.5	58.52 +.10	37.0 −3.8	42.84 +.12	75.1 −0.5
28.5	13.53 +.06	92.1 2.9	15.58 .05	61.0 −0.2	58.58 +.03	40.8 3.7	42.93 .07	74.8 −0.2
Mar. 10.5	13.50 −.12	95.1 2.9	15.61 +.01	60.9 0.0	58.57 −.05	44.4 3.5	42.98 +.03	74.7 0.0
20.4	13.30 .28	97.9 2.7	15.60 −.03	60.9 +0.2	58.49 .11	47.7 3.2	42.99 −.01	74.9 +0.2
30.4	12.94 .43	100.5 2.5	15.55 .06	61.2 0.3	58.35 .16	50.8 2.9	42.96 .04	75.2 0.4
Apr. 9.4	12.44 −.55	102.8 +2.1	15.48 −.08	61.6 +0.4	58.16 −.21	53.6 −2.5	42.90 −.07	75.7 +0.5
19.4	11.84 .64	104.7 1.7	15.39 .10	62.0 0.5	57.93 .25	55.9 2.1	42.82 .09	76.2 0.6
29.3	11.16 .71	106.2 1.2	15.29 .11	62.6 0.6	57.67 .28	57.8 1.7	42.73 .10	76.8 0.6
May 9.3	10.43 .74	107.1 0.7	15.18 .11	63.1 0.6	57.37 .30	59.3 1.2	42.62 .11	77.4 0.6
19.3	9.68 .74	107.5 +0.1	15.07 .11	63.7 0.6	57.07 .31	60.3 0.7	42.52 .11	78.1 0.6
29.3	8.94 −.72	107.4 −0.4	14.96 −.10	64.3 +0.5	56.75 −.31	60.8 −0.2	42.41 −.10	78.6 +0.6
June 8.2	8.23 .68	106.7 1.0	14.87 .09	64.8 0.5	56.44 .31	60.8 +0.3	42.31 .09	79.2 0.5
18.2	7.58 .61	105.5 1.5	14.78 .08	65.2 0.4	56.14 .30	60.3 0.7	42.23 .08	79.6 0.4
28.2	7.00 .53	103.8 1.9	14.71 .06	65.6 0.4	55.85 .28	59.3 1.2	42.15 .07	80.0 0.3
July 8.1	6.51 .45	101.6 2.3	14.66 .04	66.0 0.3	55.58 .25	57.8 1.6	42.09 .05	80.3 0.2
18.1	6.13 −.33	99.1 −2.7	14.63 −.02	66.2 +0.2	55.35 −.21	56.0 +2.0	42.05 −.03	80.5 +0.1
28.1	5.85 .21	96.2 3.0	14.62 .00	66.3 +0.1	55.16 .17	53.8 2.3	42.02 −.01	80.6 0.0
Aug. 7.1	5.70 −.09	93.1 3.3	14.63 +.02	66.3 −0.1	55.02 .11	51.3 2.6	42.02 +.01	80.5 −0.1
17.0	5.67 +.03	89.7 3.4	14.67 .05	66.2 0.2	54.94 −.05	48.6 2.7	42.04 .03	80.3 0.3
27.0	5.76 .16	86.2 3.5	14.73 .08	65.9 0.4	54.92 +.01	45.9 2.8	42.09 .06	79.9 0.5
Sept. 6.0	5.99 +.29	82.7 −3.6	14.83 +.11	65.4 −0.6	54.96 +.08	43.1 +2.7	42.17 +.09	79.3 −0.7
16.0	6.35 .42	79.1 3.6	14.95 .14	64.7 0.8	55.08 .16	40.5 2.5	42.27 .12	78.5 0.9
25.9	6.84 .55	75.6 3.5	15.11 .17	63.8 1.0	55.28 .23	38.0 2.3	42.41 .16	77.5 1.1
Oct. 5.9	7.44 .67	72.2 3.3	15.30 .21	62.6 1.3	55.54 .30	35.9 1.9	42.59 .19	76.2 1.4
15.9	8.18 .78	69.0 3.0	15.52 .24	61.3 1.5	55.88 .37	34.2 1.5	42.80 .23	74.8 1.6
25.8	9.01 +.89	66.1 −2.7	15.78 +.27	59.7 −1.7	56.28 +.43	33.0 +0.9	43.05 +.26	73.1 −1.8
Nov. 4.8	9.95 .97	63.6 2.3	16.07 .30	57.9 1.8	56.74 .48	32.4 +0.3	43.33 .29	71.3 1.9
14.8	10.96 1.04	61.5 1.8	16.38 .32	56.0 2.0	57.23 .51	32.4 −0.3	43.64 .32	69.3 2.0
24.7	12.03 1.08	59.9 1.3	16.72 .34	54.0 2.0	57.76 .53	33.0 0.9	43.96 .34	67.2 2.1
Dec. 4.7	13.13 1.10	58.8 0.8	17.06 .34	51.9 2.0	58.29 .53	34.3 1.5	44.31 .35	65.1 2.1
14.7	14.23+1.08	58.4 −0.2	17.40 +.33	49.9 −2.0	58 82 +.52	36.1 −2.1	44.65 +.34	63.0 −2.0
24.7	15.30 1.04	58.5 +0.4	17.74 .32	47.9 1.9	59.32 .48	38.5 2.6	44.99 .33	61.0 1.9
34.6	16.30+ .96	59.2 +1.0	18.05 +.30	46.1 −1.7	59.79 +.43	41.3 −3.1	45.32 +.31	59.2 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α Ursæ Majoris.*		*δ Leonis.*		*δ Crateris.*		*τ Leonis.*	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 10 57	° ′ +62 18	h m 11 8	° ′ +21 5	h m 11 14	° ′ −14 12	h m 11 22	° ′ + 3 26
	s	″	s	″	s	″	s	″
(Dec. 30.7)	13.07 +.59	70.3 −0.1	28.79 +.35	70.9 −1.6	2.60 +.33	11.9 −2.5	29.38 +.33	24.1 −2.1
Jan. 9.7	13.64 .54	70.5 +0.5	29.13 .32	69.5 1.3	2.92 .30	14.4 2.5	29.70 .31	22.0 2.0
19.6	14.15 .48	71.2 1.0	29.44 .29	68.4 0.9	3.20 .27	16.9 2.4	29.99 .28	20.2 1.8
29.6	14.59 .40	72.5 1.5	29.70 .24	67.6 0.6	3.46 .23	19.2 2.3	30.25 .24	18.5 1.5
Feb. 8.6	14.95 .31	74.3 1.9	29.93 .20	67.2 −0.2	3.66 .19	21.5 2.2	30.47 .20	17.1 1.3
18.5	15.22 +.22	76.4 +2.3	30.10 +.15	67.2 +0.1	3.83 +.14	23.6 −2.0	30.65 +.15	16.0 −1.0
28.5	15.40 .12	78.8 2.5	30.23 .10	67.4 0.4	3.95 .10	25.5 1.7	30.78 .11	15.2 0.7
Mar. 10.5	15.47 +.03	81.3 2.6	30.30 .05	67.9 0.6	4.02 .05	27.1 1.5	30.87 .07	14.6 0.5
20.5	15.46 −.06	83.9 2.6	30.34 +.01	68.7 0.8	4.05 +.01	28.5 1.3	30.91 +.03	14.3 −0.2
30.4	15.36 .14	86.5 2.5	30.33 −.02	69.6 0.9	4.05 −.02	29.6 1.0	30.92 .00	14.2 0.0
Apr. 9.4	15.18 −.20	88.8 +2.2	30.29 −.05	70.5 +1.0	4.02 −.05	30.5 −0.7	30.90 −.03	14.3 +0.2
19.4	14.95 .26	91.0 1.9	30.22 .08	71.6 1.0	3.96 .07	31.1 0.5	30.85 .06	14.5 0.3
29.4	14.67 .29	92.7 1.6	30.13 .09	72.6 1.0	3.88 .08	31.5 0.3	30.78 .07	14.9 0.4
May 9.3	14.36 .32	94.1 1.2	30.03 .10	73.5 0.9	3.79 .09	31.6 −0.1	30.71 .08	15.3 0.5
19.3	14.04 .33	95.1 0.7	29.92 .11	74.4 0.8	3.69 .10	31.6 +0.1	30.61 .09	15.9 0.5
29.3	13.70 −.33	95.5 +0.2	29.81 −.11	75.1 +0.6	3.59 −.10	31.4 +0.3	30.52 −.09	16.4 +0.6
June 8.2	13.38 .31	95.5 −0.3	29.70 .10	75.7 0.5	3.49 .10	30.9 0.5	30.43 .09	17.0 0.6
18.2	13.08 .29	95.0 0.7	29.60 .09	76.1 0.3	3.39 .10	30.3 0.7	30.34 .09	17.6 0.6
28.2	12.80 .26	94.0 1.2	29.51 .08	76.3 +0.1	3.30 .09	29.6 0.8	30.25 .08	18.1 0.5
July 8.2	12.56 .24	92.6 1.6	29.43 .07	76.3 −0.1	3.21 .08	28.7 0.9	30.17 .07	18.6 0.5
18.1	12.36 −.18	90.8 −2.0	29.36 −.05	76.1 −0.3	3.14 −.06	27.7 +1.0	30.11 −.06	19.1 +0.4
28.1	12.20 .13	88.6 2.4	29.32 .03	75.8 0.5	3.08 .05	26.7 1.1	30.06 .04	19.5 0.3
Aug. 7.1	12.10 .08	86.1 2.7	29.29 −.01	75.2 0.7	3.04 −.03	25.6 1.1	30.02 −.02	19.8 0.2
17.1	12.05 −.02	83.3 2.9	29.29 +.01	74.4 0.9	3.02 .00	24.5 1.0	30.01 .00	19.9 +0.1
27.0	12.06 +.04	80.2 3.1	29.31 .04	73.4 1.1	3.03 +.02	23.6 0.9	30.01 +.02	19.9 −0.1
Sept. 6.0	12.14 +.11	77.0 −3.3	29.37 +.07	72.2 −1.3	3.07 +.05	22.7 +0.8	30.05 +.05	19.8 −0.3
16.0	12.28 .17	73.7 3.4	29.45 .10	70.8 1.5	3.14 .09	22.0 0.6	30.11 .08	19.4 0.5
25.9	12.48 .24	70.3 3.4	29.57 .14	69.1 1.7	3.25 .13	21.6 +0.3	30.22 .12	18.8 0.7
Oct. 5.9	12.76 .31	66.9 3.3	29.73 .18	67.3 1.9	3.40 .17	21.4 0.0	30.35 .16	17.9 1.0
15.9	13.10 .38	63.6 3.2	29.92 .22	65.3 2.1	3.58 .21	21.6 −0.3	30.53 .19	16.8 1.2
25.9	13.51 +.44	60.5 −3.0	30.16 +.25	63.2 −2.2	3.81 +.24	22.0 −0.7	30.74 +.23	15.5 −1.5
Nov. 4.8	13.99 .50	57.6 2.8	30.43 .29	60.9 2.3	4.07 .28	22.9 1.1	30.99 .27	13.8 1.7
14.8	14.51 .55	54.9 2.4	30.73 .32	58.7 2.3	4.37 .31	24.2 1.4	31.28 .30	12.0 1.9
24.8	15.08 .58	52.7 2.0	31.07 .34	56.4 2.3	4.69 .33	25.7 1.7	31.59 .32	10.0 2.1
Dec. 4.8	15.68 .61	51.0 1.5	31.42 .35	54.1 2.2	5.03 .34	27.6 2.0	31.92 .34	7.8 2.2
14.7	16.29 +.61	49.7 −1.0	31.78 +.36	52.0 −2.0	5.37 +.35	29.7 −2.2	32.26 +.34	5.6 −2.2
24.7	16.90 .60	49.0 −0.4	32.14 .35	50.2 1.8	5.72 .34	32.0 2.4	32.60 .34	3.4 2.2
34.7	17.49 +.57	48.8 +0.1	32.48 +.34	48.5 −1.5	6.05 +.32	34.5 −2.5	32.94 +.32	1.3 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	λ Draconis.		υ Leonis.		β Leonis.		γ Ursæ Majoris.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 11 25	+69° 54′	h m 11 31	− 0° 14′	h m 11 43	+15° 9′	h m 11 48	+54° 16′
	s	″	s	″	s	″	s	″
(Dec. 30.7)	8.90 +.77	41.9 −0.2	31.42 +.33	17.8 −2.1	39.41 +.34	48.0 −1.9	16.39 +.50	47.3 −1.0
Jan. 9.7	9.65 .72	42.0 +0.4	31.75 .31	19.9 2.0	39.75 .32	46.2 1.7	16.89 .48	46.7 −0.4
19.7	10.34 .65	42.7 1.0	32.04 .28	21.9 1.9	40.06 .30	44.6 1.4	17.35 .44	46.6 +0.2
29.6	10.96 .57	44.0 1.5	32.31 .24	23.8 1.7	40.35 .26	43.4 1.0	17.77 .39	47.0 0.7
Feb. 8.6	11.47 .46	45.8 2.0	32.53 .20	25.4 1.5	40.59 .22	42.6 0.7	18.14 .33	48.0 1.2
18.6	11.88 +.34	48.0 +2.4	32.72 +.16	26.7 −1.2	40.79 +.18	42.1 −0.3	18.44 +.26	49.5 +1.7
28.5	12.16 .22	50.6 2.7	32.86 .12	27.8 0.9	40.95 .13	41.9 0.0	18.67 .19	51.3 2.0
Mar. 10.5	12.32 +.09	53.3 2.8	32.95 .07	28.6 0.7	41.06 .09	42.0 +0.3	18.82 .12	53.5 2.3
20.5	12.35 −.03	56.2 2.8	33.01 +.04	29.1 0.4	41.13 .05	42.4 0.5	18.91 +.05	55.9 2.4
30.5	12.26 .14	59.0 2.7	33.02 .00	29.5 −0.2	41.15 +.01	43.0 0.7	18.92 −.02	58.3 2.5
Apr. 9.4	12.07 −.24	61.6 +2.5	33.01 −.03	29.6 0.0	41.15 −.02	43.8 +0.8	18.37 −.08	60.8 +2.4
19.4	11.78 .32	64.1 2.2	32.97 .05	29.5 +0.1	41.11 .05	44.6 0.9	18.76 .13	63.1 2.2
29.4	11.42 .39	66.2 1.8	32.91 .07	29.3 0.3	41.06 .07	45.5 0.9	18.61 .17	65.3 2.0
May 9.3	11.00 .44	67.8 1.4	32.84 .08	28.9 0.4	40.98 .08	46.4 0.9	18.42 .20	67.1 1.7
19.3	10.54 .47	69.0 1.0	32.75 .09	28.5 0.5	40.89 .09	47.3 0.8	18.21 .22	68.6 1.3
29.3	10.06 −.48	69.7 +0.4	32.66 −.09	28.0 +0.5	40.79 −.10	48.1 +0.7	17.98 −.23	69.7 +0.9
June 8.3	9.57 .48	69.9 −0.1	32.57 .09	27.5 0.6	40.69 .10	48.8 0.6	17.74 .24	70.4 +0.5
18.2	9.10 .46	69.6 0.6	32.48 .09	26.9 0.6	40.60 .10	49.4 0.5	17.50 .23	70.6 0.0
28.2	8.65 .43	68.7 1.1	32.39 .08	26.3 0.6	40.50 .09	49.9 0.4	17.27 .22	70.4 −0.4
July 8.2	8.24 .39	67.4 1.6	32.31 .07	25.7 0.6	40.41 .08	50.1 +0.2	17.06 .21	69.7 0.9
18.2	7.87 −.34	65.5 −2.0	32.24 −.06	25.2 +0.5	40.33 −.07	50.3 0.0	16.86 −.19	68.6 −1.3
28.1	7.56 .28	63.3 2.4	32.18 .05	24.6 0.5	40.26 .06	50.2 −0.1	16.69 .16	67.1 1.7
Aug. 7.1	7.32 .21	60.6 2.8	32.14 .03	24.2 0.4	40.21 .04	50.0 0.3	16.54 .12	65.2 2.1
17.1	7.14 .13	57.7 3.1	32.11 −.01	23.9 0.3	40.17 −.02	49.5 0.5	16.44 .09	63.0 2.4
27.0	7.05 −.05	54.5 3.3	32.11 +.01	23.7 +0.1	40.16 .00	48.9 0.8	16.37 −.04	60.4 2.7
Sept. 6.0	7.04 +.03	51.0 −3.5	32.14 +.04	23.6 −0.1	40.18 +.03	48.0 −1.0	16.35 .00	57.6 −3.0
16.0	7.12 .12	47.5 3.6	32.20 .07	23.8 0.3	40.22 .06	46.9 1.2	16.38 +.05	54.5 3.2
26.0	7.29 .22	43.8 3.7	32.29 .11	24.2 0.5	40.30 .10	45.6 1.4	16.46 .11	51.2 3.3
Oct. 5.9	7.55 .31	40.1 3.6	32.41 .15	24.8 0.8	40.42 .14	44.1 1.7	16.60 .17	47.9 3.4
15.9	7.91 .40	36.6 3.5	32.58 .19	25.7 1.1	40.57 .18	42.3 1.9	16.80 .23	44.5 3.4
25.9	8.35 +.48	33.1 −3.3	32.79 +.23	26.9 −1.3	40.77 +.22	40.3 −2.0	17.06 +.29	41.1 −3.3
Nov. 4.9	8.89 .58	29.9 3.0	33.03 .26	28.4 1.6	41.01 .26	38.2 2.2	17.38 .35	37.8 3.2
14.8	9.51 .65	27.0 2.7	33.31 .29	30.1 1.8	41.28 .30	36.0 2.3	17.76 .40	34.7 3.0
24.8	10.20 .71	24.5 2.3	33.62 .32	32.0 2.0	41.59 .32	33.6 2.3	18.18 .44	31.9 2.7
Dec. 4.8	10.94 .76	22.5 1.8	33.95 .33	34.1 2.1	41.92 .34	31.3 2.3	18.64 .48	29.4 2.3
14.7	11.71 +.78	21.0 −1.2	34.29 +.34	36.3 −2.2	42.26 +.35	29.0 −2.2	19.13 +.50	27.4 −1.8
24.7	12.49 .77	20.1 −0.6	34.63 .34	38.5 2.2	42.61 .35	26.9 2.1	19.64 .50	25.8 1.3
34.7	13.26 +.75	19.8 0.0	34.96 +.33	40.7 −2.1	42.96 +.34	24.9 −1.9	20.14 +.49	24.8 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*o* Virginis.		4 Draconis (H.)		*γ* Corvi.		*β* Chamæleontis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$11^{h}\ 59^{m}$	$+9^{\circ}\ 18'$	$12^{h}\ 7^{m}$	$+78^{\circ}\ 11'$	$12^{h}\ 10^{m}$	$-16^{\circ}\ 57'$	$12^{h}\ 12^{m}$	$-78^{\circ}\ 43'$
	s	″	s	″	s	″	s	″
(Dec. 30.7)	48.64 +.34	75.0 −2.1	17.60+1.21	60.1 −0.5	21.04 +.35	6.5 −2.3	5.61+1.22	3.6 −1.5
Jan. 9.7	48.97 .33	73.0 1.9	18.81 1.18	59.9 +0.1	21.38 .33	8.8 2.4	6.81 1.16	5.4 2.1
19.7	49.29 .30	71.2 1.6	19.96 1.11	60.3 0.7	21.70 .31	11.2 2.4	7.93 1.06	7.8 2.6
29.6	49.58 .27	69.7 1.3	21.02 1.00	61.3 1.3	22.00 .28	13.6 2.3	8.93 .93	10.6 3.0
Feb. 8.6	49.83 .23	68.6 1.0	21.96 .86	63.0 1.8	22.26 .24	15.9 2.2	9.80 .79	13.8 3.3
18.6	50.04 +.19	67.7 −0.7	22.74 +.69	65.1 +2.3	22.47 +.20	18.1 −2.1	10.51 +.63	17.3 −3.6
28.6	50.21 .15	67.2 0.4	23.33 .50	67.6 2.7	22.65 .16	20.1 1.9	11.06 .46	21.2 3.8
Mar. 10.5	50.34 .10	66.9 −0.1	23.73 .30	70.4 2.9	22.79 .11	21.9 1.7	11.43 .29	24.9 3.9
20.5	50.42 .06	66.9 +0.1	23.93 +.09	73.4 3.0	22.88 .08	23.4 1.4	11.64 +.12	28.8 3.9
30.5	50.47 +.03	67.2 0.3	23.92 −.11	76.4 3.0	22.94 .04	24.8 1.2	11.68 −.04	32.7 3.8
Apr. 9.5	50.48 .00	67.6 +0.5	23.72 −.29	79.4 +2.8	22.96 +.01	25.9 −1.0	11.55 −.20	36.4 −3.6
19.4	50.46 −.03	68.2 0.6	23.34 .46	82.1 2.6	22.96 −.02	26.7 0.7	11.27 .35	39.9 3.4
29.4	50.42 .05	68.9 0.7	22.80 .60	84.6 2.3	22.93 .04	27.4 0.5	10.86 .48	43.2 3.1
May 9.4	50.36 .07	69.7 0.8	22.14 .72	86.7 1.9	22.88 .06	27.8 0.3	10.31 .61	46.1 2.7
19.3	50.28 .08	70.4 0.8	21.37 .80	88.3 1.4	22.81 .07	28.0 −0.1	9.64 .72	48.6 2.3
29.3	50.20 −.09	71.2 +0.7	20.53 −.86	89.4 +0.3	22.73 −.08	28.0 +0.1	8.88 −.80	50.7 −1.8
June 8.3	50.11 .09	71.9 0.7	19.64 .90	89.9 +0.3	22.64 .09	27.8 0.3	8.03 .87	52.3 1.3
18.3	50.02 .09	72.5 0.6	18.74 .90	90.0 −0.2	22.54 .10	27.5 0.4	7.13 .92	53.4 0.8
28.2	49.92 .09	73.1 0.5	17.84 .88	89.5 0.8	22.44 .10	26.9 0.6	6.19 .94	53.9 −0.2
July 8.2	49.83 .09	73.5 0.4	16.98 .84	88.4 1.3	22.34 .10	26.3 0.7	5.24 .94	53.9 +0.3
18.2	49.75 −.08	73.8 +0.2	16.16 −.78	86.8 −1.8	22.25 −.09	25.5 +0.8	4.31 −.91	53.3 +0.8
28.2	49.68 .07	74.0 +0.1	15.43 .69	84.7 2.3	22.16 .08	24.6 0.9	3.43 .84	52.2 1.3
Aug. 7.1	49.61 .05	74.0 −0.1	14.78 .59	82.2 2.7	22.08 .07	23.6 1.0	2.63 .75	50.6 1.8
17.1	49.57 .03	73.9 0.2	14.24 .48	79.3 3.1	22.01 .05	22.6 1.0	1.93 .63	48.5 2.2
27.1	49.54 −.01	73.6 0.4	13.81 .36	76.1 3.4	21.97 −.03	21.6 0.9	1.37 .48	46.1 2.6
Sept. 6.0	49.54 +.01	73.1 −0.6	13.53 −.22	72.6 −3.6	21.95 .00	20.7 +0.8	0.97 −.31	43.4 +2.8
16.0	49.57 .04	72.3 0.9	13.38 −.07	68.9 3.8	21.97 +.03	20.0 0.7	0.75 −.12	40.5 2.9
26.0	49.63 .08	71.4 1.1	13.38 +.08	65.1 3.9	22.02 .07	19.3 0.5	0.74 +.09	37.5 2.9
Oct. 6.0	49.73 .12	70.2 1.3	13.55 .25	61.2 3.9	22.11 .11	19.0 +0.2	0.93 .30	34.6 2.8
15.9	49.87 .16	68.7 1.6	13.88 .41	57.3 3.8	22.24 .16	18.9 −0.1	1.33 .51	31.8 2.6
25.9	50.05 +.20	67.0 −1.8	14.37 +.57	53.6 −3.6	22.42 +.20	19.1 −0.4	1.94 +.70	29.4 +2.3
Nov. 4.9	50.27 .24	65.1 2.0	15.02 .72	50.0 3.4	22.65 .24	19.6 0.7	2.74 .88	27.2 1.9
14.9	50.53 .28	63.1 2.1	15.82 .87	46.8 3.1	22.91 .28	20.6 1.1	3.70 1.03	25.6 1.4
24.8	50.82 .31	60.9 2.2	16.76 1.00	43.9 2.6	23.21 .31	21.8 1.4	4.80 1.15	24.5 0.8
Dec. 4.8	51.14 .33	58.6 2.3	17.81 1.09	41.5 2.1	23.54 .34	23.4 1.7	6.00 1.23	24.0 +0.1
14.8	51.48 +.34	56.3 −2.3	18.95+1.16	39.6 −1.6	23.88 +.35	25.3 −2.0	7.25+1.26	24.2 −0.5
24.7	51.83 .34	54.1 2.2	20.14 1.20	38.3 1.0	24.24 .35	27.4 2.2	8.52 1.25	25.0 1.1
34.7	52.17 +.34	52.0 −2.0	21.34+1.19	37.7 −0.3	24.59 +.35	29.7 −2.3	9.76+1.21	26.5 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Virginis.		α¹ Crucis.		β Corvi.		κ Draconis.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 12 14	° ′ − 0 4	h m 12 20	° ′ −62 30	h m 12 28	° ′ −22 48	h m 12 28	° ′ +70 21
	s	″	s	″	s	″	s	″
(Dec. 30.7)	28.87 +.34	40.4 −2.2	41.10 +.60	23.5 −1.7	48.69 +.36	31.0 −2.2	59.06 +.78	61.7 −1.1
Jan. 9.7	29.20 .33	42.6 2.1	41.68 .57	25.5 2.2	49.05 .35	33.3 2.3	59.84 .77	61.0 −0.4
19.7	29.52 .31	44.6 2.0	42.23 .53	28.0 2.7	49.39 .33	35.6 2.4	60.60 .73	60.9 +0.2
29.7	29.81 .28	46.5 1.8	42.73 .47	30.8 3.0	49.70 .30	38.1 2.4	61.30 .67	61.4 0.8
Feb. 8.6	30.07 .24	48.1 1.5	43.17 .41	34.0 3.3	49.98 .26	40.5 2.4	61.94 .59	62.6 1.4
18.6	30.29 +.20	49.5 −1.2	43.54 +.34	37.4 −3.5	50.22 +.22	42.9 −2.3	62.49 +.49	64.3 +1.9
28.6	30.47 .16	50.6 0.9	43.84 .26	41.0 3.6	50.42 .18	45.2 2.2	62 93 .38	66.5 2.4
Mar. 10.5	30.61 .12	51.4 0.7	44.06 .18	44.6 3.6	50.58 .14	47.2 2.0	63.26 .26	69.0 2.7
20.5	30.70 .08	52.0 0.4	44.21 .11	48.2 3.5	50.69 .10	49.1 1.8	63.46 .14	71.8 2.8
30.5	30.77 .04	52.3 −0.2	44.28 +.04	51.7 3.4	50.77 .06	50.8 1.5	63.54 +.02	74.7 2.9
Apr. 9.5	30.79 +.01	52.4 0.0	44.29 −.02	55.0 −3.2	50.82 +.03	52.2 −1.3	63.50 −.09	77.6 +2.9
19.4	30.79 −.01	52.3 +0.2	44.23 .08	58.1 3.0	50.83 .00	53.4 1.1	63.35 .20	80.5 2.7
29.4	30.77 .03	52.0 0.3	44.12 .14	60.9 2.7	50.81 −.03	54.4 0.9	63.10 .29	83.1 2.5
May 9.4	30.72 .05	51.6 0.4	43.95 .19	63.4 2.3	50.77 .05	55.2 0.6	62.77 .36	85.4 2.1
19.4	30.66 .07	51.2 0.5	43.74 .23	65.5 1.9	50.72 .07	55.7 0.4	62.38 .42	87.3 1.7
29.3	30.59 −.08	50.7 +0.5	43.49 −.27	67.2 −1.5	50.64 −.08	55.9 −0.2	61.93 −.47	88.8 +1.2
June 8.3	30.51 .08	50.1 0.6	43.20 .30	68.4 1.0	50.56 .09	56.0 0.0	61.44 .49	89.8 0.7
18.3	30.42 .09	49.5 0.6	42.90 .32	69.2 −0.5	50.46 .10	55.8 +0.3	60.94 .51	90.2 +0.2
28.2	30.33 .09	49.0 0.6	42.57 .33	69.4 0.0	50.35 .11	55.4 0.5	60.43 .51	90.1 −0.3
July 8.2	30.24 .09	48.4 0.6	42.24 .33	69.2 +0.5	50.25 .11	54.9 0.7	59.92 .49	89.5 0.9
18.2	30.15 −.08	47.8 +0.5	41.90 −.32	68.5 +0.9	50.13 −.11	54.1 +0.8	59.44 −.47	88.4 −1.4
28.2	30.07 .07	47.4 0.4	41.59 .30	67.3 1.4	50.03 .10	53.2 1.0	58.99 .43	86.8 1.8
Aug. 7.1	30.00 .06	47.0 0.3	41.29 .27	65.7 1.8	49.93 .09	52.1 1.1	58.58 .38	84.7 2.3
17.1	29.94 .05	46.7 0.2	41.04 .23	63.8 2.1	49.85 .07	51.0 1.1	58.23 .32	82.2 2.7
27.1	29.91 −.03	46.5 +0.1	40.84 .17	61.5 2.4	49.78 .05	49.9 1.1	57.94 .25	79.3 3.0
Sept. 6.1	29.89 .00	46.5 −0.1	40.70 −.10	59.0 +2.5	49.75 −.02	48.7 +1.1	57.72 −.17	76.1 −3.3
16.0	29.90 +.03	46.7 0.3	40.63 −.02	56.4 2.6	49.74 +.01	47.7 1.0	57.59 −.09	72.7 3.6
26.0	29.95 .07	47.1 0.5	40.65 +.06	53.7 2.6	49.77 .05	46.7 0.8	57.54 .00	69.0 3.7
Oct. 6.0	30.04 .11	47.7 0.8	40.75 .15	51.2 2.5	49.84 .10	46.0 0.6	57.60 +.10	65.2 3.8
15.9	30.16 .15	48.6 1.0	40.94 .24	48.8 2.2	49.97 .14	45.5 +0.3	57.75 .21	61.4 3.8
25.9	30.33 +.19	49.8 −1.3	41.23 +.33	46.7 +1.8	50.13 +.19	45.4 0.0	58.02 +.31	57.5 −3.7
Nov. 4.9	30.54 .23	51.3 1.6	41.60 .41	45.1 1.4	50.35 .24	45.5 −0.4	58.38 .42	53.9 3.6
14.9	30.79 .27	52.9 1.8	42.05 .48	43.9 0.9	50.60 .28	46.1 0.7	58.85 .51	50.4 3.3
24.8	31.07 .30	54.8 2.0	42.56 .54	43.2 +0.4	50.90 .31	47.0 1.1	59.41 .60	47.2 3.0
Dec. 4.8	31.39 .32	56.9 2.1	43.13 .58	43.2 −0.2	51.23 .34	48.3 1.5	60.05 .68	44.4 2.5
14.8	31.72 +.33	59.1 −2.2	43.73 +.60	43.7 −0.8	51.58 +.36	50.0 −1.8	60.76 +.73	42.1 −2.0
24.8	32.06 .34	61.3 2.2	44.34 .60	44.8 1.4	51.95 .37	51.9 2.0	61.51 .76	40.4 1.4
34.7	32 41 +.34	63.5 −2.2	44.94 +.59	46.5 −1.9	52.32 +.37	54.0 −2.2	62.28 +.78	39.2 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	32² Camelop. (H.)		α Can. Venaticorum.		θ Virginis.		α Virginis. (*Spica.*)	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	h m 12 48	° ′ +83 58	h m 12 51	° ′ +38 52	h m 13 4	° ′ − 4 58	h m 13 19	° ′ −10 36
	s	″	s	″	s	″	s	″
(Dec. 30.7)	25.51+2.19	59.7 −0.9	4.33 +.40	72.7 −2.0	27.20 +.34	23.6 −2.2	35.88 +.34	28.0 −2.1
Jan. 9.7	27.73 2.20	59.1 −0.3	4.73 .39	71.0 1.5	27.54 .33	25.8 2.1	36.23 .34	30.1 2.1
19.7	29.92 2.15	59.1 +0.3	5.12 .38	69.7 1.0	27.88 .32	27.9 2.0	36.57 .33	32.2 2.1
29.7	32.02 2.02	59.8 1.0	5.49 .35	69.0 −0.4	28.19 .30	29.8 1.9	36.89 .31	34.2 2.0
Feb. 8.6	33.94 1.80	61.1 1.6	5.83 .32	68.9 +0.1	28.48 .27	31.6 1.7	37.19 .29	36.2 1.9
18.6	35.63+1.53	62.9 +2.1	6.13 +.28	69.2 +0.6	28.74 +.24	33.2 −1.5	37.46 +.26	38.0 −1.7
28.6	37.01 1.22	65.3 2.5	6.38 .23	70.1 1.0	28.96 .21	34.6 1.2	37.70 .22	39.5 1.5
Mar. 10.6	38.05 .84	67.9 2.8	6.58 .18	71.3 1.4	29.15 .17	35.7 0.9	37.90 .18	40.9 1.2
20.5	38.70 .46	70.9 3.0	6.73 .13	72.9 1.7	29.30 .13	36.5 0.7	38.07 .15	42.0 1.0
30.5	38.97+ .08	73.9 3.1	6.83 .08	74.8 2.0	29.41 .10	37.1 0.5	38.20 .11	42.9 0.8
Apr. 9.5	38.85− .31	77.0 +3.0	6.89 +.03	76.8 +2.1	29.49 +.06	37.4 −0.2	38.29 +.08	43.6 −0.6
19.4	38.36 .67	79.9 2.8	6.89 −.01	78.9 2.1	29.54 .03	37.6 0.0	38.36 .05	44.1 0.4
29.4	37.52 .99	82.6 2.5	6.86 .05	81.0 2.0	29.56 +.01	37.6 +0.1	38.40 +.02	44.4 0.2
May 9.4	36.36 1.28	85.0 2.2	6.80 .08	83.1 1.9	29.56 −.01	37.4 0.2	38.41 .00	44.5 −0.1
19.4	34.97 1.51	87.0 1.8	6.71 .10	84.9 1.7	29.53 .03	37.1 0.3	38.40 −.02	44.5 +0.1
29.3	33.35−1.69	88.5 +1.2	6.59 −.12	86.5 +1.5	29.49 −.05	36.7 +0.4	38.37 −.04	44.3 +0.2
June 8.3	31.58 1.82	89.5 0.7	6.46 .14	87.8 1.2	29.43 .07	36.3 0.5	38.31 .06	44.1 0.3
18.3	29.71 1.90	89.9 +0.2	6.32 .15	88.8 0.8	29.36 .08	35.8 0.5	38.25 .07	43.7 0.4
28.3	27.78 1.92	89.8 −0.4	6.16 .15	89.5 0.5	29.27 .09	35.2 0.5	38.17 .09	43.3 0.5
July 8.2	25.86 1.90	89.1 1.0	6.01 .16	89.7 +0.1	29.18 .10	34.7 0.6	38.07 .10	42.8 0.5
18.2	23.99−1.82	87.9 −1.5	5.85 −.15	89.6 −0.3	29.08 −.10	34.1 +0.5	37.97 −.10	42.3 +0.6
28.2	22.22 1.71	86.1 2.0	5.70 .14	89.1 0.7	28.98 .10	33.6 0.5	37.87 .11	41.7 0.6
Aug. 7.1	20.57 1.56	83.9 2.4	5.56 .13	88.3 1.1	28.88 .09	33.1 0.5	37.76 .10	41.1 0.6
17.1	19.10 1 37	81.3 2.6	5.43 .12	87.0 1.4	28.79 .08	32.6 0.4	37.66 .09	40.5 0.6
27.1	17.83 1.15	78.3 3.2	5.32 .09	85.4 1.8	28.72 .07	32.3 0.3	37.57 .08	40.0 0.5
Sept. 6.1	16.79− .91	74.9 −3.5	5.24 −.06	83.5 −2.1	28.66 −.05	32.1 +0.2	37.50 −.06	39.5 +0.4
16.0	16.01 .63	71.3 3.7	5.19 −.03	81.2 2.4	28.62 −.02	32.0 0.0	37.45 −.03	39.1 0.3
26.0	15.52 .34	67.5 3.8	5.18 +.01	78.7 2.6	28.62 +.02	32.1 −0.2	37.43 .00	38.9 +0.1
Oct. 6.0	15.33− .03	63.6 3.9	5.22 .06	76.0 2.9	28.66 .06	32.4 0.4	37.46 +.04	38.9 −0.1
16.0	15.45+ .29	59.6 3.9	5.30 .11	73.0 3.0	28.74 .10	33.0 0.7	37.52 .09	39.1 0.3
25.9	15.91+ .62	55.7 −3.8	5.43 +.16	69.9 −3.1	28.86 +.14	33.8 −1.0	37.63 +.14	39.5 −0.6
Nov. 4.9	16.69 .94	52.0 3.6	5.62 .21	66.7 3.2	29.03 .19	34.9 1.2	37.79 .18	40.3 0.9
14.9	17.78 1.25	48.5 3.3	5.86 .26	63.5 3.2	29.24 .23	36.3 1.5	37.99 .22	41.3 1.1
24.8	19.18 1.53	45.3 3.0	6.14 .31	60.4 3.1	29.49 .27	37.9 1.7	38.23 .26	42.6 1.4
Dec. 4.8	20.84 1.78	42.6 2.5	6.47 .35	57.4 2.9	29.78 .30	39.7 1.9	38.52 .30	44.1 1.7
14.8	22.74+1.98	40.3 −2.0	6.84 +.38	54.6 −2.6	30.10 +.33	41.7 −2.0	38.83 +.33	45.9 −1.9
24.8	24.80 2.11	38.6 1.4	7.22 .39	52.2 2.2	30.43 .34	43.8 2.1	39.17 .34	47.8 2.0
34.7	26.96+2.19	37.6 −0.8	7.62 +.40	50.2 −1.8	30.78 +.34	45.9 −2.2	39.51 +.34	49.9 −2.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Virginis.		η Ursæ Majoris.		η Bootis.		β Centauri.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$13^{h}\ 29^{m}$	$-0^{\circ}\ 3'$	$13^{h}\ 43^{m}$	$+49^{\circ}\ 49'$	$13^{h}\ 49^{m}$	$+18^{\circ}\ 55'$	$13^{h}\ 56^{m}$	$-59^{\circ}\ 51'$
	s	″	s	″	s	″	s	″
(Dec. 30.8)	16.94 +.34	17.1 −2.2	21.70 +.44	74.1 −2.3	37.76 +.34	34.9 −2.4	18.29 +.58	28.4 −0.5
Jan. 9.8	17.28 .34	19.2 2.1	22.14 .44	72.0 1.8	38.10 .34	32.6 2.1	18.87 .58	29.2 1.0
19.7	17.61 .33	21.2 2.0	22.58 .44	70.5 1.2	38.45 .34	30.7 1.8	19.46 .57	30.5 1.5
29.7	17.94 .31	23.1 1.8	23.02 .43	69.6 −0.6	38.79 .33	29.1 1.4	20.02 .55	32.3 1.9
Feb. 8.7	18.24 .29	24.8 1.5	23.44 .40	69.3 0.0	39.11 .31	27.9 1.0	20.57 .52	34.4 2.3
18.7	18.51 +.26	26.2 −1.3	23.83 +.36	69.6 +0.6	39.40 +.28	27.1 −0.6	21.07 +.48	36.8 −2.6
28.6	18.75 .23	27.3 1.0	24.17 .32	70.5 1.2	39.67 .25	26.8 −0.1	21.52 .43	39.5 2.8
Mar. 10.6	18.96 .19	28.1 0.7	24.46 .26	72.0 1.6	39.89 .21	26.8 +0.3	21.92 .37	42.4 3.0
20.6	19.13 .15	28.6 0.4	24.70 .21	73.8 2.0	40.09 .17	27.3 0.6	22.27 .31	45.4 3.1
30.5	19.27 .12	28.9 −0.1	24.88 .15	76.0 2.3	40.24 .14	28.1 0.9	22.55 .25	48.5 3.1
Apr. 9.5	19.37 +.09	28.9 +0.1	25.00 +.09	78.5 +2.5	40.36 +.10	29.1 +1.2	22.77 +.19	51.6 −3.1
19.5	19.44 .06	28.7 0.3	25.06 +.04	81.1 2.6	40.45 .07	30.4 1.3	22.93 .13	54.6 3.0
29.5	19.48 .03	28.4 0.4	25.08 −.01	83.7 2.6	40.50 .04	31.8 1.4	23.03 .07	57.5 2.8
May 9.4	19.50 +.01	27.9 0.5	25.04 .06	86.3 2.5	40.52 +.01	33.3 1.5	23.08 +.01	60.3 2.6
19.4	19.49 −.02	27.4 0.6	24.96 .10	88.7 2.3	40.52 −.02	34.8 1.5	23.06 −.04	62.8 2.4
29.4	19.46 −.04	26.8 +0.6	24.84 −.14	90.9 +2.0	40.49 −.04	36.2 +1.4	22.99 −.09	65.1 −2.1
June 8.3	19.42 .06	26.1 0.6	24.68 .17	92.8 1.7	40.44 .06	37.6 1.3	22.87 .14	67.0 1.8
18.3	19.35 .07	25.4 0.6	24.50 .19	94.3 1.3	40.37 .08	38.8 1.1	22.70 .19	68.6 1.4
28.3	19.28 .08	24.8 0.6	24.30 .21	95.4 0.9	40.28 .10	39.7 0.9	22.49 .23	69.8 1.0
July 8.3	19.18 .09	24.2 0.6	24.08 .22	96.1 +0.4	40.17 .11	40.5 0.7	22.24 .26	70.6 0.6
18.2	19.08 −.10	23.7 +0.5	23.85 −.23	96.3 0.0	40.06 −.12	41.1 +0.4	21.96 −.29	70.9 −0.1
28.2	18.98 .11	23.2 0.4	23.61 .23	96.0 −0.5	39.93 .13	41.4 +0.2	21.66 .30	70.8 +0.3
Aug. 7.2	18.87 .10	22.8 0.3	23.38 .23	95.3 0.9	39.81 .13	41.4 −0.1	21.36 .30	70.3 0.8
17.2	18.77 .10	22.6 0.2	23.16 .21	94.2 1.4	39.68 .12	41.2 0.4	21.06 .29	69.3 1.2
27.1	18.68 .09	22.4 +0.1	22.95 .19	92.6 1.8	39.56 .11	40.7 0.7	20.77 .27	67.9 1.6
Sept. 6.1	18.60 −.07	22.4 −0.1	22.76 −.17	90.5 −2.2	39.46 −.09	39.9 −0.9	20.52 −.23	66.2 +1.9
16.1	18.54 .04	22.6 0.3	22.61 .13	88.1 2.6	39.38 .07	38.8 1.2	20.32 .17	64.1 2.1
26.0	18.52 −.01	23.0 0.5	22.50 .09	85.4 2.9	39.32 −.04	37.5 1.5	20.18 .11	61.9 2.3
Oct. 6.0	18.53 +.03	23.5 0.7	22.44 −.04	82.3 3.2	39.30 .00	35.8 1.8	20.11 −.03	59.6 2.4
16.0	18.58 .07	24.4 1.0	22.43 +.02	79.0 3.4	39.32 +.04	33.9 2.0	20.12 +.06	57.2 2.3
26.0	18.67 +.12	25.5 −1.2	22.48 +.09	75.6 −3.5	39.39 +.09	31.7 −2.3	20.22 +.15	54.9 +2.2
Nov. 4.9	18.81 .16	26.8 1.4	22.60 .15	72.0 3.6	39.50 .14	29.4 2.5	20.42 .24	52.8 2.0
14.9	19.00 .21	28.4 1.7	22.78 .21	68.3 3.6	39.66 .19	26.8 2.6	20.70 .32	50.9 1.7
24.9	19.23 .25	30.1 1.9	23.03 .27	64.8 3.5	39.87 .23	24.2 2.7	21.07 .40	49.5 1.3
Dec. 4.8	19.50 .29	32.1 2.0	23.34 .33	61.4 3.3	40.13 .27	21.5 2.7	21.51 .47	48.5 0.8
14.8	19.80 +.31	34.2 −2.1	23.69 +.38	58.2 −3.0	40.42 +.30	18.8 −2.6	22.01 +.52	47.9 +0.3
24.8	20.13 .33	36.4 2.2	24.09 .41	55.4 2.6	40.74 .33	16.2 2.5	22.56 .56	47.9 −0.2
34.8	20.46 +.34	38.6 −2.2	24.52 +.44	53.1 −2.0	41.07 +.34	13.8 −2.3	23.14 +.59	48.3 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*α* Draconis.		*α* Bootis. (*Arcturus.*)		*θ* Bootis.		*ρ* Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$14^{h}\ 1^{m}$	$+64^{\circ}\ 52'$	$14^{h}\ 10^{m}$	$+19^{\circ}\ 43'$	$14^{h}\ 21^{m}$	$+52^{\circ}\ 19'$	$14^{h}\ 27^{m}$	$+30^{\circ}\ 49'$
	s	″	s	″	s	″	s	″
(Dec. 30.8)	30.96 +.57	35.9 −2.4	48.96 +.33	52.7 −2.5	34.80 +.42	67.6 −2.6	15.10 +.33	57.9 −2.7
Jan. 9.8	31.55 .60	33.8 1.8	49.30 .34	50.4 2.2	35.24 .44	65.2 2.2	15.45 .35	55.5 2.3
19.8	32.16 .61	32.4 1.1	49.64 .34	48.3 1.9	35.69 .45	63.3 1.6	15.81 .36	53.4 1.9
29.7	32.77 .60	31.6 −0.4	49.98 .33	46.5 1.5	36.14 .45	62.0 1.0	16.17 .35	51.7 1.4
Feb. 8.7	33.36 .57	31.5 +0.2	50.30 .31	45.2 1.1	36.59 .43	61.4 −0.3	16.52 .34	50.6 0.9
18.7	33.92 +.53	32.0 +0.9	50.61 +.29	44.3 −0.7	37.01 +.40	61.4 +0.3	16.85 +.32	50.0 −0.3
28.7	34.42 .47	33.2 1.4	50.88 .26	43.9 −0.2	37.40 .36	62.0 0.9	17.15 .29	49.9 +0.2
Mar. 10.6	34.85 .39	34.9 2.0	51.13 .23	43.9 +0.2	37.74 .32	63.2 1.5	17.42 .25	50.4 0.7
20.6	35.21 .31	37.1 2.4	51.34 .19	44.3 0.6	38.03 .26	64.9 1.9	17.66 .22	51.3 1.1
30.6	35.48 .22	39.7 2.7	51.51 .16	45.1 0.9	38.27 .21	67.0 2.3	17.86 .18	52.6 1.5
Apr. 9.5	35.66 +.13	42.5 +2.9	51.65 +.12	46.2 +1.2	38.45 +.15	69.5 +2.6	18.02 +.14	54.3 +1.8
19.5	35.75 +.05	45.5 3.0	51.75 .09	47.5 1.4	38.57 .09	72.1 2.7	18.14 .10	56.1 2.0
29.5	35.75 −.04	48.5 2.9	51.83 .06	48.9 1.5	38.63 +.03	74.9 2.8	18.23 .07	58.2 2.1
May 9.5	35.67 .12	51.4 2.8	51.87 +.03	50.5 1.5	38.64 −.02	77.7 2.7	18.27 +.03	60.3 2.1
19.4	35.52 .19	54.1 2.6	51.88 .00	52.0 1.5	38.59 .07	80.4 2.6	18.29 .00	62.5 2.1
29.4	35.30 −.25	56.5 +2.3	51.86 −.03	53.5 +1.4	38.50 −.11	82.9 +2.4	18.27 −.03	64.5 +2.0
June 8.4	35.02 .30	58.6 1.9	51.82 .05	54.9 1.3	38.36 .15	85.1 2.1	18.22 .06	66.4 1.8
18.4	34.69 .35	60.3 1.4	51.76 .07	56.2 1.2	38.19 .19	87.0 1.7	18.15 .09	68.1 1.6
28.3	34.32 .38	61.5 1.0	51.67 .09	57.3 1.0	37.98 .22	88.5 1.3	18.05 .11	69.5 1.3
July 8.3	33.92 .41	62.2 +0.5	51.57 .11	58.1 0.7	37.75 .24	89.6 0.8	17.92 .13	70.7 1.0
18.3	33.51 −.42	62.4 −0.1	51.45 −.12	58.8 +0.5	37.50 −.26	90.2 +0.4	17.78 −.15	71.5 +0.6
28.2	33.08 .42	62.1 0.6	51.32 .13	59.1 +0.2	37.23 .27	90.3 −0.1	17.63 .16	71.9 +0.3
Aug. 7.2	32.66 .41	61.2 1.1	51.18 .14	59.2 0.0	36.96 .27	90.0 0.6	17.47 .17	72.0 −0.1
17.2	32.25 .40	59.9 1.6	51.04 .14	59.0 −0.3	36.68 .26	89.2 1.1	17.30 .17	71.8 0.5
27.2	31.86 .37	58.1 2.0	50.91 .13	58.5 0.6	36.42 .25	87.9 1.5	17.13 .16	71.1 0.8
Sept. 6.1	31.51 −.33	55.8 −2.5	50.79 −.11	57.8 −0.9	36.18 −.23	86.1 −2.0	16.98 −.14	70.1 −1.2
16.1	31.20 .28	53.1 2.9	50.68 .09	56.7 1.2	35.96 .20	84.0 2.4	16.85 .12	68.7 1.6
26.1	30.95 .22	50.1 3.2	50.61 .06	55.3 1.5	35.78 .16	81.4 2.7	16.74 .09	67.0 1.9
Oct. 6.1	30.77 .14	46.7 3.5	50.56 −.02	53.6 1.8	35.64 .11	78.5 3.1	16.66 .05	64.9 2.2
16.0	30.67 −.06	43.1 3.7	50.56 +.02	51.7 2.1	35.56 −.05	75.3 3.3	16.63 −.01	62.5 2.5
26.0	30.65 +.03	39.3 −3.8	50.60 +.07	49.5 −2.3	35.54 +.02	71.8 −3.5	16.64 +.04	59.9 −2.8
Nov. 5.0	30.73 .12	35.4 3.9	50.69 .11	47.1 2.5	35.59 .08	68.2 3.7	16.70 .09	57.0 3.0
14.9	30.90 .22	31.6 3.8	50.82 .16	44.5 2.7	35.71 .16	64.4 3.7	16.82 .14	54.0 3.1
24.9	31.16 .31	27.8 3.7	51.01 .21	41.7 2.8	35.90 .22	60.7 3.7	16.99 .20	50.9 3.1
Dec. 4.9	31.52 .40	24.2 3.4	51.24 .25	38.9 2.8	36.16 .29	57.1 3.5	17.21 .24	47.7 3.1
14.9	31.95 +.47	20.9 −3.1	51.52 +.29	36.1 −2.7	36.48 +.34	53.7 −3.3	17.48 +.28	44.6 −3.0
24.8	32.46 .53	18.0 2.6	51.82 .31	33.4 2.6	36.85 .39	50.6 2.9	17.78 .32	41.7 2.8
34.8	33.02 +.59	15.6 −2.2	52.15 +.33	30.9 −2.4	37.26 +.43	47.9 −2.5	18.12 +.35	39.1 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	5 Ursæ Minoris.		α² Centauri (mean.)		ε Bootis.		α² Libræ.	
	Right Ascension.	Declination North.	Right Ascension.	Declination South.	Right Ascension.	Declination North.	Right Ascension.	Declination South.
	h m 14 27	+76° 9′	h m 14 32	−60° 23′	h m 14 40	+27° 30′	h m 14 44	−15° 36′
	s	″	s	″	s	″	s	″
(Dec. 30.8)	44.22 +.84	40.2 −2.5	21.57 +.56	40.8 0.0	20.76 +.33	62.6 −2.7	59.68 +.33	5.2 −1.6
Jan. 9.8	45.12 .93	38.0 1.9	22.14 .58	40.9 −0.5	21.09 .34	60.1 2.3	60.01 .34	6.8 1.7
19.8	46.08 .97	36.5 1.2	22.72 .58	41.7 1.0	21.44 .35	57.9 1.9	60.36 .34	8.5 1.7
29.7	47.07 .99	35.6 −0.6	23.30 .57	42.9 1.4	21.79 .35	56.2 1.5	60.70 .34	10.2 1.7
Feb. 8.7	48.05 .97	35.4 +0.1	23.86 .55	44.5 1.8	22.13 .34	54.9 1.0	61.04 .33	11.9 1.6
18.7	49.00 +.91	35.9 +0.8	24.40 +.52	46.5 −2.1	22.46 +.32	54.1 −0.5	61.36 +.31	13.5 −1.5
28.7	49.88 .83	37.0 1.4	24.90 .48	48.7 2.4	22.77 .29	53.9 0.0	61.66 .29	15.0 1.4
Mar. 10.6	50.65 .71	38.7 1.9	25.35 .43	51.2 2.6	23.04 .26	54.1 +0.5	61.93 .26	16.3 1.2
20.6	51.30 .58	40.9 2.3	25.75 .37	53.9 2.8	23.28 .23	54.8 0.9	62.18 .23	17.4 1.0
30.6	51.81 .43	43.4 2.7	26.10 .32	56.8 2.9	23.49 .19	56.0 1.3	62.39 .20	18.4 0.9
Apr. 9.6	52.16 +.27	46.4 +3.0	26.39 +.26	59.6 −2.9	23.66 +.15	57.5 +1.6	62.58 +.17	19.1 −0.7
19.5	52.35 +.11	49.4 3.1	26.62 .20	62.5 2.9	23.80 .12	59.2 1.8	62.73 .14	19.7 0.5
29.5	52.38 −.05	52.5 3.1	26.78 .14	65.3 2.8	23.90 .08	61.1 2.0	62.86 .11	20.2 0.3
May 9.5	52.26 .20	55.5 3.0	26.89 .08	68.1 2.7	23.96 .05	63.2 2.0	62.96 .08	20.5 0.2
19.4	51.98 .34	58.4 2.8	26.94 +.02	70.7 2.5	23.99 +.02	65.2 2.0	63.03 .05	20.7 −0.1
29.4	51.57 −.47	61.1 +2.5	26.92 −.04	73.1 −2.3	23.99 −.01	67.2 +1.9	63.07 +.03	20.7 0.0
June 8.4	51.04 .58	63.3 2.1	26.85 .10	75.2 2.0	23.96 .04	69.1 1.8	63.08 .00	20.7 +0.1
18.4	50.41 .68	65.2 1.6	26.71 .16	77.1 1.7	23.90 .07	70.8 1.6	63.07 −.03	20.6 0.1
28.3	49.69 .75	66.6 1.1	26.53 .21	78.5 1.3	23.82 .10	72.2 1.3	63.02 .05	20.4 0.2
July 8.3	48.90 .81	67.4 0.6	26.30 .25	79.6 1.0	23.71 .12	73.4 1.0	62.96 .08	20.2 0.3
18.3	48.07 −.85	67.8 +0.1	26.02 −.29	80.3 −0.5	23.58 −.14	74.3 +0.7	62.87 −.10	19.9 +0.3
28.3	47.21 .86	67.7 −0.4	25.72 .31	80.6 −0.1	23.44 .16	74.9 0.4	62.76 .12	19.5 0.4
Aug. 7.2	46.35 .86	67.0 1.0	25.39 .33	80.4 +0.4	23.28 .16	75.2 +0.1	62.63 .13	19.0 0.4
17.2	45.49 .84	65.7 1.5	25.06 .33	79.8 0.8	23.12 .16	75.0 −0.3	62.50 .13	18.6 0.5
27.2	44.68 .79	64.0 2.0	24.73 .31	78.8 1.2	22.96 .16	74.6 0.6	62.37 .13	18.1 0.5
Sept. 6.1	43.91 −.73	61.8 −2.4	24.43 −.28	77.4 +1.6	22.80 −.15	73.7 −1.0	62.24 −.12	17.6 +0.5
16.1	43.22 .65	59.2 2.8	24.17 .24	75.7 1.9	22.66 .13	72.6 1.4	62.12 .10	17.2 0.4
26.1	42.62 .54	56.2 3.2	23.95 .19	73.6 2.1	22.55 .10	71.0 1.7	62.03 .07	16.8 0.3
Oct. 6.1	42.13 .43	52.9 3.5	23.81 .10	71.4 2.3	22.46 .06	69.2 2.0	61.98 −.04	16.5 0.2
16.0	41.77 .29	49.3 3.7	23.74 −.02	69.1 2.3	22.42 −.02	67.1 2.3	61.96 .00	16.4 +0.1
26.0	41.55 −.14	45.5 −3.8	23.77 +.07	66.7 +2.2	22.42 +.03	64.6 −2.6	61.98 +.05	16.4 −0.1
Nov. 5.0	41.49 +.02	41.6 3.9	23.88 .16	64.5 2.1	22.47 .08	61.9 2.8	62.06 .10	16.6 0.3
15.0	41.59 .18	37.6 3.9	24.09 .26	62.4 1.9	22.58 .13	59.1 2.9	62.18 .15	17.1 0.6
24.9	41.85 .35	33.8 3.7	24.39 .34	60.6 1.6	22.73 .18	56.1 3.0	62.36 .20	17.8 0.8
Dec. 4.9	42.28 .50	30.1 3.5	24.78 .42	59.2 1.2	22.94 .23	53.0 3.0	62.59 .25	18.7 1.0
14.9	42.86 +.65	26.8 −3.2	25.23 +.48	58.2 +0.7	23.19 +.27	50.0 −2.9	62.85 +.28	19.9 −1.3
24.8	43.57 .77	23.8 2.7	25.75 .53	57.7 +0.3	23.48 .31	47.1 2.8	63.16 .31	21.3 1.5
34.8	44.40 +.88	21.3 −2.2	26.30 +.57	57.7 −0.2	23.80 +.33	44.4 −2.6	63.48 +.33	22.8 −1.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Ursæ Minoris.		β Bootis.		β Libræ.		μ¹ Bootis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	$14^{h}\ 50^{m}$	$+74^{\circ}\ 34'$	$14^{h}\ 57^{m}$	$+40^{\circ}\ 47'$	$15^{h}\ 11^{m}$	$-\ 8^{\circ}\ 59'$	$15^{h}\ 20^{m}$	$+37^{\circ}\ 44'$
	s	"	s	"	s	"	s	"
(Dec. 30.8)	59.59 +.71	57.9 −2.7	56.35 +.34	74.5 −2.9	16.97 +.31	34.0 −1.7	28.16 +.31	40.7 −3.0
Jan. 9.8	60.35 .80	55.4 2.1	56.70 .36	71.8 2.5	17.29 .32	35.7 1.7	28.48 .34	37.9 2.6
19.8	61.19 .86	53.6 1.5	57.07 .38	69.5 2.0	17.62 .33	37.5 1.7	28.83 .36	35.5 2.2
29.8	62.07 .89	52.4 0.9	57.46 .38	67.7 1.5	17.95 .33	39.1 1.6	29.20 .37	33.5 1.7
Feb. 8.7	62.97 .89	51.8 −0.2	57.84 .38	66.6 0.9	18.28 .32	40.7 1.5	29.57 .36	32.1 1.1
18.7	63.85 +.85	52.0 +0.5	58.21 +.36	65.9 −0.3	18.60 +.31	42.1 −1.3	29.93 +.35	31.2 −0.5
28.7	64.67 .79	52.8 1.1	58.56 .33	65.9 +0.3	18.90 .29	43.3 1.1	30.27 .33	31.0 0.0
Mar. 10.7	65.42 .70	54.2 1.7	58.87 .30	66.5 0.8	19.19 .27	44.3 0.8	30.59 .31	31.3 +0.6
20.6	66.07 .59	56.1 2.2	59.16 .26	67.6 1.3	19.44 .24	45.1 0.7	30.88 .27	32.2 1.1
30.6	66.60 .46	58.6 2.6	59.40 .22	69.2 1.8	19.67 .22	45.6 0.4	31.14 .24	33.6 1.6
Apr. 9.6	66.99 +.32	61.3 +2.9	59.60 +.18	71.2 +2.1	19.88 +.19	46.0 −0.2	31.36 +.20	35.3 +2.0
19.5	67.25 .18	64.3 3.1	59.77 .14	73.4 2.4	20.05 .16	46.1 −0.1	31.54 .16	37.5 2.3
29.5	67.36 +.04	67.4 3.1	59.88 .09	75.9 2.5	20.20 .13	46.1 +0.1	31.69 .12	39.8 2.4
May 9.5	67.33 −.10	70.5 3.1	59.95 .05	78.5 2.6	20.32 .10	45.9 0.2	31.79 .08	42.4 2.5
19.5	67.16 .23	73.5 2.9	59.98 +.01	81.1 2.6	20.41 .08	45.6 0.3	31.85 +.04	44.9 2.5
29.4	66.87 −.35	76.4 +2.7	59.97 −.03	83.6 +2.4	20.47 +.05	45.3 +0.4	31.87 .00	47.4 +2.4
June 8.4	66.46 .46	78.8 2.3	59.92 .07	85.9 2.2	20.51 +.02	44.9 0.4	31.85 −.04	49.9 2.3
18.4	65.94 .56	81.0 1.9	59.84 .10	88.0 2.0	20.51 −.01	44.5 0.4	31.79 .07	52.1 2.1
28.4	65.34 .64	82.7 1.5	59.72 .13	89.8 1.6	20.48 .04	44.0 0.5	31.70 .11	54.0 1.8
July 8.3	64.67 .70	83.9 1.0	59.58 .16	91.3 1.3	20.43 .07	43.5 0.4	31.58 .14	55.7 1.5
18.3	63.94 −.75	84.7 +0.5	59.40 −.18	92.4 +0.9	20.35 −.09	43.1 +0.4	31.43 −.16	57.0 +1.1
28.3	63.17 .78	84.8 −0.1	59.21 .20	93.1 +0.5	20.25 .11	42.7 0.4	31.25 .18	57.9 0.7
Aug. 7.3	62.38 .79	84.5 0.6	59.00 .21	93.3 0.0	20.14 .13	42.3 0.4	31.06 .20	58.4 +0.3
17.2	61.59 .78	83.7 1.1	58.79 .22	93.1 −0.4	20.00 .13	41.9 0.4	30.85 .21	58.5 −0.1
27.2	60.82 .75	82.3 1.6	58.57 .21	92.5 0.8	19.87 .14	41.5 0.3	30.64 .21	58.2 0.5
Sept. 6.2	60.08 −.71	80.4 −2.1	58.36 −.20	91.5 −1.3	19.73 −.13	41.3 +0.2	30.43 −.20	57.4 −1.0
16.1	59.40 .65	78.1 2.5	58.17 .18	90.0 1.7	19.61 .12	41.1 +0.1	30.23 .19	56.2 1.4
26.1	58.79 .56	75.4 2.9	58.00 .15	88.1 2.1	19.50 .09	41.0 0.0	30.05 .16	54.6 1.8
Oct. 6.1	58.28 .46	72.3 3.3	57.86 .11	85.8 2.4	19.42 .06	41.0 −0.1	29.90 .13	52.7 2.2
16.1	57.87 .34	68.9 3.6	57.77 .07	83.2 2.8	19.38 −.02	41.2 0.3	29.79 .09	50.3 2.5
26.0	57.59 −.21	65.2 −3.8	57.72 −.02	80.3 −3.1	19.37 +.02	41.6 −0.5	29.72 −.04	47.6 −2.8
Nov. 5.0	57.45 −.07	61.3 3.9	57.74 +.04	77.1 3.3	19.42 .07	42.2 0.7	29.71 +.02	44.7 3.1
15.0	57.46 +.08	57.4 3.9	57.81 .10	73.7 3.4	19.51 .12	43.0 0.9	29.76 .07	41.5 3.3
24.9	57.61 .23	53.6 3.8	57.94 .16	70.3 3.5	19.66 .17	44.0 1.1	29.86 .13	38.1 3.4
Dec. 4.9	57.92 .38	49.8 3.6	58.13 .22	66.8 3.4	19.86 .22	45.3 1.3	30.02 .19	34.8 3.4
14.9	58.38 +.52	46.3 −3.3	58.38 +.27	63.4 −3.3	20.09 +.26	46.7 −1.5	30.24 +.24	31.4 −3.3
24.9	58.96 .65	43.1 3.0	58.67 .31	60.2 3.1	20.37 .29	48.2 1.6	30.50 .28	28.2 3.1
34.8	59.66 +.75	40.4 −2.5	59.00 +.35	57.3 −2.7	20.67 +.31	49.9 −1.6	30.80 +.32	25.2 −2.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ^2 Ursæ Minoris.		*a* Coronæ Borealis.		*a* Serpentis.		*ε* Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	$15^{h}\ 20^{m}$	$+72^{\circ}\ 12'$	$15^{h}\ 30^{m}$	$+27^{\circ}\ 3'$	$15^{h}\ 39^{m}$	$+\ 6^{\circ}\ 45'$	$15^{h}\ 45^{m}$	$+\ 4^{\circ}\ 47'$
	s	″	s	″	s	″	s	″
(Dec. 30.9)	52.08 +.57	19.7 −3.0	10.94 +.29	63.8 −2.8	1.62 +.28	24.0 −2.1	30.71 +.27	40.7 −2.1
Jan. 9.8	52.70 .66	16.9 2.5	11.24 .31	61.1 2.6	1.91 .30	21.9 2.0	31.00 .30	38.6 2.0
19.8	53.40 .72	14.7 1.9	11.57 .33	58.7 2.2	2.22 .31	19.9 1.9	31.31 .31	36.6 1.9
29.8	54.15 .76	13.1 1.3	11.90 .34	56.6 1.8	2.54 .32	18.0 1.7	31.62 .32	34.8 1.7
Feb. 8.8	54.93 .78	12.1 −0.6	12.25 .34	55.1 1.3	2.87 .32	16.5 1.4	31.94 .32	33.3 1.4
18.7	55.71 +.77	11.8 0.0	12.58 +.33	54.0 −0.8	3.18 +.31	15.2 −1.1	32.26 +.31	32.0 −1.1
28.7	56.46 .73	12.2 +0.7	12.90 .31	53.5 −0.3	3.49 .30	14.3 0.7	32.57 .30	31.1 0.8
Mar. 10.7	57.16 .66	13.2 1.3	13.20 .29	53.5 +0.2	3.77 .28	13.8 −0.4	32.86 .28	30.5 0.4
20.7	57.79 .58	14.8 1.9	13.48 .26	54.0 0.7	4.04 .26	13.6 0.0	33.13 .26	30.2 −0.1
30.6	58.33 .48	17.0 2.3	13.73 .23	54.9 1.2	4.29 .23	13.7 +0.3	33.38 .24	30.3 +0.2
Apr. 9.6	58.76 +.37	19.5 +2.7	13.95 +.20	56.3 +1.5	4.51 +.20	14.2 +0.6	33.60 +.21	30.7 +0.5
19.6	59.07 .26	22.4 3.0	14.13 .17	58.0 1.8	4.70 .18	15.0 0.9	33.80 .18	31.4 0.8
29.5	59.27 .14	25.5 3.1	14.28 .13	59.9 2.0	4.86 .15	16.0 1.1	33.97 .16	32.3 1.0
May 9.5	59.34 +.01	28.6 3.1	14.40 .10	62.0 2.2	5.00 .12	17.1 1.2	34.11 .13	33.3 1.1
19.5	59.30 −.11	31.8 3.0	14.48 .07	64.2 2.2	5.10 .09	18.3 1.3	34.23 .10	34.5 1.2
29.5	59.13 −.22	34.8 +2.9	14.53 +.03	66.4 +2.2	5.18 +.06	19.6 +1.3	34.31 +.07	35.7 +1.2
June 8.4	58.86 .32	37.5 2.6	14.54 .00	68.5 2.1	5.23 +.03	20.9 1.3	34.36 .04	36.9 1.2
18.4	58.49 .42	40.0 2.3	14.52 −.04	70.5 1.9	5.24 .00	22.1 1.2	34.38 +.01	38.1 1.1
28.4	58.03 .50	42.1 1.9	14.47 .07	72.3 1.7	5.22 −.03	23.3 1.1	34.38 −.02	39.2 1.1
July 8.4	57.49 .57	43.7 1.4	14.38 .10	73.9 1.4	5.18 .06	24.4 1.0	34.34 .05	40.2 1.0
18.3	56.89 −.62	44.9 +0.9	14.27 −.11	75.1 +1.1	5.11 −.09	25.3 +0.8	34.27 −.08	41.1 +0.8
28.3	56.24 .66	45.6 +0.4	14.14 .14	76.1 0.8	5.01 .11	26.0 0.7	34.17 .11	41.8 0.7
Aug. 7.3	55.56 .69	45.7 −0.1	13.98 .16	76.7 0.4	4.89 .13	26.6 0.5	34.05 .13	42.4 0.5
17.2	54.86 .70	45.4 0.6	13.81 .17	77.0 +0.1	4.75 .14	27.0 0.3	33.92 .14	42.8 0.3
27.2	54.16 .69	44.5 1.1	13.63 .18	76.9 −0.3	4.60 .15	27.2 +0.1	33.77 .15	43.1 +0.1
Sept. 6.2	53.48 −.66	43.1 −1.6	13.45 −.17	76.5 −0.6	4.45 −.15	27.2 −0.1	33.62 −.15	43.1 −0.1
16.2	52.84 .62	41.2 2.1	13.28 .16	75.6 1.0	4.31 .14	27.0 0.3	33.48 .14	42.9 0.3
26.1	52.24 .56	38.8 2.5	13.12 .14	74.5 1.4	4.18 .12	26.5 0.6	33.35 .12	42.6 0.5
Oct. 6.1	51.72 .48	36.1 2.9	13.00 .11	72.9 1.7	4.08 .09	25.8 0.8	33.24 .09	42.0 0.7
16.1	51.28 .38	32.9 3.3	12.90 .07	71.0 2.0	4.00 .05	24.9 1.1	33.16 .06	41.1 1.0
26.1	50.95 −.27	29.5 −3.6	12.85 −.03	68.8 −2.3	3.97 −.01	23.7 −1.3	33.12 −.02	40.1 −1.2
Nov. 5.0	50.74 .15	25.8 3.7	12.84 +.02	66.3 2.6	3.98 +.03	22.3 1.5	33.13 +.03	38.8 1.4
15.0	50.65 −.02	22.0 3.8	12.89 .07	63.6 2.8	4.03 .08	20.6 1.8	33.18 .08	37.2 1.6
25.0	50.70 +.12	18.1 3.9	12.99 .13	60.7 2.9	4.14 .13	18.7 2.0	33.28 .13	35.5 1.8
Dec. 4.9	50.88 .25	14.3 3.8	13.15 .18	57.7 3.0	4.30 .18	16.7 2.1	33.43 .17	33.6 2.0
14.9	51.20 +.38	10.6 −3.5	13.35 +.22	54.6 −3.0	4.50 +.22	14.6 −2.2	33.63 +.22	31.6 −2.1
24.9	51.64 .50	7.2 3.2	13.60 .26	51.7 2.9	4.74 .26	12.4 2.2	33.87 .26	29.5 2.1
34.9	52.20 +.61	4.2 −2.8	13.88 +.30	48.8 −2.7	5.01 +.29	10.2 −2.1	34.14 +.28	27.4 −2.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Ursæ Minoris.		ε Coronæ Borealis.		δ Scorpii.		β¹ Scorpii.	
	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.	Right Ascension.	Declination *South*.
	h m 15 47	+78° 6′	h m 15 53	+27° 10′	h m 15 54	−22° 19′	h m 15 59	−19° 30′
	s	″	s	″	s	″	s	″
(Dec. 30.9)	47.69 +.67	53.6 −3.1	10.81 +.27	52.2 −2.9	2.41 +.30	13.6 −0.8	14.91 +.29	57.8 −1.0
Jan. 9.9	48.45 .83	50.7 2.7	11.09 .30	49.4 2.6	2.72 .32	14.6 1.0	15.22 .31	58.9 1.1
19.8	49.35 .95	48.3 2.2	11.40 .32	46.9 2.3	3.06 .34	15.7 1.1	15.54 .33	60.0 1.2
29.8	50.36 1.04	46.4 1.6	11.73 .33	44.8 1.9	3.41 .35	16.8 1.2	15.88 .34	61.2 1.2
Feb. 8.8	51.43 1.09	45.2 0.9	12.07 .33	43.1 1.4	3.76 .35	18.0 1.2	16.23 .34	62.4 1.2
18.7	52.54+1.10	44.6 −0.2	12.40 +.33	42.0 −0.9	4.10 +.34	19.2 −1.2	16.56 +.33	63.6 −1.1
28.7	53.63 1.05	44.7 +0.4	12.73 .32	41.3 −0.4	4.44 .33	20.3 1.1	16.90 .32	64.7 1.0
Mar. 10.7	54.67 .99	45.5 1.1	13.04 .30	41.2 +0.1	4.76 .31	21.4 1.0	17.21 .31	65.7 0.9
20.7	55.63 .90	46.9 1.7	13.32 .28	41.6 0.6	5.06 .29	22.4 0.9	17.51 .29	66.6 0.8
30.6	56.47 .77	48.8 2.2	13.59 .25	42.5 1.1	5.34 .27	23.2 0.8	17.79 .27	67.3 0.7
Apr. 9.6	57.17 +.62	51.2 +2.6	13.82 +.22	43.8 +1.5	5.60 +.25	24.0 −0.7	18.05 +.24	67.9 −0.6
19.6	57.70 .45	54.0 2.9	14.03 .19	45.4 1.8	5.83 .22	24.7 0.6	18.28 .22	68.4 0.5
29.6	58.06 .27	57.0 3.1	14.20 .16	47.3 2.0	6.04 .19	25.3 0.5	18.48 .19	68.8 0.4
May 9.5	58.24 +.08	60.1 3.2	14.34 .12	49.5 2.2	6.21 .16	25.7 0.4	18.66 .16	69.1 0.3
19.5	58.23 −.10	63.3 3.1	14.45 .09	51.7 2.3	6.35 .13	26.1 0.4	18.81 .13	69.3 0.2
29.5	58.04 −.28	66.4 +3.0	14.52 +.05	54.0 +2.3	6.47 +.10	26.5 −0.3	18.92 +.10	69.5 −0.1
June 8.4	57.67 .44	69.3 2.8	14.55 +.02	56.3 2.2	6.55 .06	26.8 0.2	19.01 .07	69.6 −0.1
18.4	57.15 .60	71.9 2.5	14.55 −.02	58.4 2.0	6.59 +.03	27.0 0.2	19.06 +.03	69.6 0.0
28.4	56.48 .74	74.2 2.1	14.52 .05	60.3 1.8	6.60 −.01	27.1 0.1	19.07 −.01	69.6 0.0
July 8.4	55.68 .85	76.2 1.7	14.45 .09	62.1 1.6	6.57 .04	27.2 −0.1	19.05 .04	69.6 +0.1
18.3	54.77 −.95	77.6 +1.2	14.34 −.12	63.5 +1.3	6.51 −.07	27.2 0.0	18.99 −.07	69.5 +0.1
28.3	53.78 1.03	78.6 0.7	14.21 .14	64.7 1.0	6.42 .10	27.2 +0.1	18.91 .10	69.4 0.2
Aug. 7.3	52.72 1.08	79.1 +0.2	14.06 .16	65.5 0.6	6.30 .13	27.0 0.2	18.79 .12	69.2 0.2
17.3	51.62 1.11	79.0 −0.3	13.89 .18	65.9 +0.3	6.17 .15	26.8 0.2	18.66 .14	69.0 0.3
27.2	50.51 1.11	78.5 0.8	13.70 .19	66.0 −0.1	6.01 .16	26.5 0.3	18.51 .15	68.7 0.3
Sept. 6.2	49.40−1.08	77.4 −1.3	13.51 −.19	65.8 −0.5	5.86 −.16	26.2 +0.4	18.35 −.15	68.4 +0.3
16.2	48.34 1.03	75.8 1.8	13.33 .18	65.1 0.8	5.70 .15	25.7 0.4	18.20 .14	68.0 0.4
26.1	47.34 .96	73.8 2.3	13.16 .16	64.1 1.2	5.56 .13	25.3 0.5	18.06 .13	67.7 0.3
Oct. 6.1	46.42 .86	71.3 2.7	13.01 .13	62.7 1.6	5.45 .10	24.8 0.5	17.95 .10	67.3 0.3
16.1	45.62 .73	68.4 3.0	12.90 .09	61.0 1.9	5.37 .06	24.4 0.4	17.86 .06	67.0 0.3
26.1	44.97 −.58	65.2 −3.3	12.82 −.05	58.9 −2.2	5.33 −.02	24.0 +0.3	17.82 −.02	66.8 +0.2
Nov. 5.0	44.47 .41	61.7 3.6	12.79 .00	56.5 2.5	5.34 +.03	23.7 +0.2	17.82 +.03	66.7 0.0
15.0	44.15 .22	58.1 3.7	12.81 +.05	53.9 2.7	5.40 .09	23.6 0.0	17.87 .08	66.7 −0.1
25.0	44.03 −.02	54.3 3.8	12.89 .10	51.0 2.9	5.51 .14	23.7 −0.2	17.98 .13	67.0 0.3
Dec. 5.0	44.11 +.18	50.5 3.8	13.01 .15	48.1 3.0	5.68 .19	24.0 0.4	18.14 .18	67.4 0.5
14.9	44.39 +.38	46.8 −3.6	13.19 +.20	45.0 −3.0	5.90 +.24	24.4 −0.5	18.35 +.23	68.0 −0.7
24.9	44.86 .56	43.3 3.3	13.42 .24	42.0 2.9	6.10 .28	25.0 0.7	18.60 .27	68.8 0.8
34.9	45.51 +.73	40.1 −2.9	13.68 +.28	39.2 −2.8	6.46 +.31	25.9 −0.9	18.89 +.30	69.7 −1.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombridge 2320.		δ Ophiuchi.		τ Herculis.		η Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 5	° ′ +68 4	h m 16 8	° ′ − 3 25	h m 16 16	° ′ +46 33	h m 16 22	° ′ +61 44
	s	″	s	″	s	″	s	″
(Dec. 30.9)	59.51 +.39	63.4 −3.3	46.07 +.26	23.5 −1.7	31.79 +.27	40.3 −3.3	31.45 +.31	57.2 −3.5
Jan. 9.9	59.95 .48	60.3 3.0	46.35 .29	25.2 1.7	32.08 .31	37.1 3.0	31.80 .38	53.9 3.1
19.8	60.47 .55	57.5 2.5	46.65 .31	26.9 1.6	32.42 .35	34.2 2.6	32.21 .44	51.0 2.7
29.8	61.05 .60	55.3 1.9	46.96 .32	28.5 1.5	32.78 .37	31.9 2.1	32.68 .48	48.6 2.1
Feb. 8.8	61.67 .63	53.7 1.3	47.28 .32	29.9 1.3	33.16 .39	30.0 1.5	33.18 .51	46.8 1.5
18.8	62.32 +.64	52.8 −0.6	47.60 +.31	31.1 −1.1	33.56 +.39	28.8 −0.9	33.70 +.52	45.6 −0.9
28.7	62.96 .63	52.5 +0.1	47.91 .30	32.1 0.8	33.95 .38	28.2 −0.3	34.22 .52	45.0 −0.2
Mar. 10.7	63.58 .60	53.0 0.8	48.21 .29	32.8 0.6	34.33 .37	28.2 +0.3	34.74 .51	45.2 +0.5
20.7	64.16 .55	54.1 1.4	48.50 .27	33.2 −0.3	34.69 .34	28.9 0.9	35.22 .47	46.0 1.1
30.7	64.68 .49	55.7 1.9	48.76 .26	33.4 0.0	35.02 .31	30.1 1.5	35.67 .42	47.5 1.7
Apr. 9.6	65.14 +.42	57.9 +2.4	49.01 +.23	33.3 +0.2	35.31 +.28	31.9 +2.0	36.06 +.37	49.4 +2.2
19.6	65.51 .33	60.5 2.8	49.23 .21	33.0 0.4	35.57 .24	34.1 2.4	36.40 .30	51.9 2.6
29.6	65.79 .23	63.4 3.0	49.42 .18	32.5 0.6	35.79 .19	36.6 2.7	36.67 .23	54.7 2.9
May 9.5	65.97 .14	66.6 3.1	49.59 .16	31.8 0.7	35.95 .14	39.4 2.8	36.87 .16	57.7 3.1
19.5	66.06 +.04	69.8 3.2	49.73 .13	31.1 0.8	36.07 .09	42.3 2.9	37.00 .09	60.9 3.2
29.5	66.05 −.05	73.0 +3.1	49.85 +.10	30.3 +0.8	36.14 +.05	45.3 +2.9	37.05 +.01	64.1 +3.2
June 8.5	65.95 .15	76.0 3.0	49.93 .06	29.5 0.8	36.16 .00	48.2 2.8	37.03 −.06	67.2 3.1
18.4	65.75 .24	78.9 2.7	49.97 +.03	28.6 0.8	36.14 −.05	51.0 2.7	36.93 .13	70.2 2.9
28.4	65.47 .32	81.5 2.4	49.99 .00	27.8 0.8	36.06 .10	53.5 2.4	36.76 .20	72.9 2.6
July 8.4	65.11 .39	83.7 2.0	49.97 −.03	27.1 0.7	35.94 .14	55.8 2.1	36.53 .26	75.4 2.2
18.4	64.68 −.46	85.6 +1.6	49.92 −.06	26.4 +0.6	35.78 −.18	57.7 +1.7	36.23 −.32	77.4 +1.8
28.3	64.20 .51	86.9 1.1	49.84 .09	25.8 0.6	35.58 .22	59.3 1.3	35.89 .37	79.0 1.4
Aug. 7.3	63.67 .55	87.8 0.6	49.73 .12	25.3 0.5	35.35 .24	60.4 0.9	35.50 .40	80.2 0.9
17.3	63.11 .57	88.1 +0.1	49.60 .14	24.9 0.3	35.09 .26	61.0 +0.4	35.08 .43	80.9 +0.4
27.2	62.52 .59	88.0 −0.4	49.46 .15	24.6 0.2	34.82 .28	61.2 0.0	34.64 .45	81.0 −0.1
Sept. 6.2	61.93 −.58	87.3 −0.9	49.31 −.15	24.4 +0.1	34.54 −.28	60.9 −0.5	34.19 −.45	80.6 −0.6
16.2	61.36 .56	86.1 1.4	49.16 .14	24.3 0.0	34.26 .27	60.2 1.0	33.74 .44	79.8 1.1
26.2	60.81 .53	84.4 1.9	49.02 .13	24.4 −0.2	33.99 .25	58.9 1.5	33.30 .42	78.4 1.6
Oct. 6.1	60.31 .47	82.3 2.4	48.90 .11	24.7 0.3	33.75 .23	57.2 1.9	32.90 .38	76.5 2.1
16.1	59.86 .40	79.7 2.8	48.81 .07	25.1 0.5	33.54 .19	55.1 2.3	32.55 .33	74.2 2.5
26.1	59.50 −.32	76.7 −3.1	48.76 −.03	25.7 −0.7	33.37 −.14	52.6 −2.7	32.25 −.26	71.4 −2.9
Nov. 5.1	59.22 .23	73.4 3.4	48.74 +.01	26.5 0.9	33.26 .08	49.7 3.0	32.02 .19	68.3 3.3
15.0	59.05 .12	69.8 3.7	48.78 .06	27.5 1.1	33.21 −.02	46.5 3.3	31.88 .10	64.9 3.5
25.0	58.98 −.01	66.0 3.8	48.87 .11	28.7 1.3	33.22 +.04	43.1 3.5	31.82 −.01	61.3 3.7
Dec. 5.0	59.03 +.11	62.2 3.8	49.00 .16	30.1 1.4	33.30 .11	39.5 3.6	31.85 +.08	57.5 3.8
14.9	59.20 +.22	58.4 −3.7	49.18 +.20	31.6 −1.6	33.44 +.17	36.0 −3.5	31.98 +.17	53.7 −3.7
24.9	59.47 .33	54.8 3.5	49.41 .24	33.2 1.6	33.65 .23	32.4 3.4	32.19 .26	50.0 3.6
34.9	59.85 +.43	51.4 −3.2	49.67 +.27	34.9 −1.7	33.91 +.29	29.1 −3.2	32.49 +.33	46.5 −3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Scorpii. (*Antares.*)		β Herculis.		A Draconis.		ζ Ophiuchi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 16 22	° ′ −26 11	h m 16 25	° ′ +21 42	h m 16 28	° ′ +68 59	h m 16 31	° ′ −10 21
	s	″	s	″	s	″	s	″
(Dec. 30.9)	52.79 +.28	50.6 −0.5	38.44 +.24	62.4 −2.8	9.01 +.35	32.4 −3.5	17.82 +.25	14.3 −1.2
Jan. 9.9	53.09 .31	51.2 0.6	38.70 .27	59.7 2.6	9.41 .45	29.1 3.1	18.09 .28	15.6 1.3
19.9	53.42 .34	51.9 0.8	38.98 .29	57.2 2.3	9.90 .53	26.2 2.7	18.39 .30	16.9 1.3
29.8	53.76 .35	52.7 0.9	39.29 .31	55.1 2.0	10.46 .59	23.8 2.1	18.70 .32	18.2 1.2
Feb. 8.8	54.12 .36	53.6 0.9	39.61 .32	53.3 1.6	11.08 .64	21.9 1.5	19.02 .32	19.4 1.1
18.8	54.47 +.35	54.5 −0.9	39.93 +.32	52.0 −1.1	11.73 +.66	20.7 −0.9	19.34 +.32	20.5 −1.0
28.7	54.82 .34	55.4 0.9	40.25 .31	51.1 0.6	12.40 .66	20.2 −0.2	19.66 .31	21.4 0.8
Mar. 10.7	55.16 .33	56.3 0.9	40.56 .30	50.8 −0.1	13.05 .64	20.4 +0.5	19.97 .30	22.1 0.6
20.7	55.49 .32	57.2 0.8	40.85 .29	50.9 +0.4	13.67 .60	21.2 1.1	20.27 .29	22.6 0.4
30.7	55.80 .30	58.0 0.8	41.13 .27	51.5 0.8	14.24 .54	22.7 1.7	20.55 .27	22.9 −0.2
Apr. 9.6	56.08 +.28	58.7 −0.7	41.38 +.24	52.6 +1.2	14.75 +.47	24.6 +2.2	20.82 +.25	23.0 0.0
19.6	56.35 .25	59.4 0.6	41.61 .22	53.9 1.5	15.18 .38	27.1 2.6	21.06 .23	23.0 +0.2
29.6	56.59 .22	60.0 0.6	41.81 .19	55.6 1.8	15.51 .29	29.9 2.9	21.29 .21	22.7 0.3
May 9.6	56.80 .19	60.6 0.5	41.99 .16	57.6 2.0	15.76 .19	33.0 3.1	21.48 .18	22.4 0.4
19.5	56.98 .16	61.1 0.5	42.13 .12	59.7 2.1	15.90 +.09	36.2 3.2	21.65 .15	22.0 0.5
29.5	57.12 +.13	61.6 −0.5	42.23 +.09	61.8 +2.1	15.94 −.01	39.4 +3.2	21.79 +.12	21.5 +0.5
June 8.5	57.23 .09	62.0 0.4	42.30 .05	63.9 2.1	15.87 .11	42.6 3.1	21.90 .09	21.0 0.5
18.4	57.31 .05	62.4 0.4	42.34 +.02	66.0 2.0	15.71 .21	45.6 2.9	21.97 .05	20.4 0.5
28.4	57.34 +.02	62.8 0.3	42.34 −.02	68.0 1.9	15.46 .30	48.4 2.6	22.01 +.02	19.9 0.5
July 8.4	57.34 −.02	63.1 0.3	42.30 .05	69.8 1.7	15.12 .38	50.9 2.3	22.01 −.02	19.4 0.5
18.4	57.29 −.06	63.3 −0.2	42.23 −.09	71.3 +1.4	14.70 −.45	53.0 +1.9	21.97 −.05	19.0 +0.5
28.3	57.22 .09	63.4 −0.1	42.13 .12	72.6 1.1	14.21 .51	54.6 1.4	21.91 .08	18.6 0.4
Aug. 7.3	57.10 .12	63.5 0.0	42.00 .14	73.6 0.8	13.67 .56	55.8 0.9	21.81 .11	18.2 0.3
17.3	56.97 .15	63.5 +0.1	41.84 .16	74.3 0.5	13.08 .60	56.5 +0.4	21.69 .13	17.9 0.3
27.3	56.81 .16	63.3 0.2	41.67 .17	74.7 +0.2	12.47 .62	56.7 −0.1	21.54 .14	17.7 0.2
Sept. 6.2	56.65 −.17	63.0 +0.3	41.49 −.18	74.7 −0.1	11.84 −.63	56.3 −0.6	21.39 −.15	17.4 +0.2
16.2	56.48 .16	62.7 0.4	41.31 .18	74.4 0.5	11.21 .61	55.4 1.1	21.24 .15	17.3 +0.1
26.2	56.32 .15	62.2 0.5	41.13 .17	73.8 0.8	10.61 .58	54.1 1.6	21.09 .14	17.2 0.0
Oct. 6.1	56.18 .12	61.7 0.5	40.97 .14	72.8 1.2	10.05 .54	52.2 2.1	20.96 .12	17.2 −0.1
16.1	56.08 .08	61.2 0.5	40.84 .11	71.4 1.5	9.54 .47	49.9 2.5	20.85 .09	17.3 0.2
26.1	56.01 −.04	60.7 +0.5	40.75 −.07	69.8 −1.8	9.10 −.39	47.1 −2.9	20.78 −.05	17.6 −0.3
Nov. 5.1	55.99 +.01	60.2 0.4	40.70 −.03	67.8 2.1	8.76 .30	44.0 3.3	20.75 −.01	18.0 0.5
15.0	56.02 .06	59.8 0.3	40.69 +.02	65.5 2.4	8.51 .19	40.6 3.5	20.77 +.05	18.5 0.6
25.0	56.11 .11	59.6 +0.2	40.74 .07	63.0 2.6	8.38 −.08	36.9 3.7	20.84 .10	19.2 0.8
Dec. 5.0	56.25 .17	59.5 0.0	40.83 .12	60.4 2.7	8.36 +.04	33.2 3.8	20.96 .14	20.0 1.0
15.0	56.45 +.22	59.6 −0.2	40.98 +.17	57.6 −2.8	8.46 +.16	29.4 −3.7	21.13 +.19	21.1 −1.1
24.9	56.69 .26	59.8 0.4	41.17 .21	54.9 2.8	8.68 .28	25.7 3.6	21.34 .23	22.2 1.2
34.9	56.97 +.30	60.3 −0.5	41.41 +.25	52.1 −2.7	9.02 +.39	22.2 −3.3	21.59 +.26	23.4 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Trianguli Australis.		η Herculis.		κ Ophiuchi.		ε Ursæ Minoris.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 16 37	° ′ −68 49	h m 16 39	° ′ +39 6	h m 16 52	° ′ + 9 32	h m 16 56	° ′ +82 12
	s	″	s	″	s	″	s	″
(Dec. 30.9)	22.34 +.56	54.4 +1.8	14.15 +.23	71.5 −3.2	37.62 +.22	13.8 −2.2	42.83 +.50	24.0 −3.4
Jan. 9.9	22.95 .65	52.8 1.4	14.40 .27	68.3 3.0	37.86 .25	11.7 2.1	43.49 .79	20.7 3.1
19.8	23.63 .71	51.6 1.0	14.70 .31	65.5 2.7	38.12 .27	9.6 1.9	44.42 1.05	17.7 2.8
29.8	24.37 .76	50.8 0.6	15.02 .33	63.0 2.2	38.40 .29	7.7 1.7	45.59 1.27	15.2 2.3
Feb. 8.8	25.15 .78	50.4 +0.2	15.36 .35	61.0 1.7	38.70 .30	6.1 1.4	46.96 1.44	13.2 1.7
18.8	25.94 +.80	50.5 −0.2	15.71 +.36	59.6 −1.2	39.01 +.31	4.8 −1.1	48.47+1.55	11.7 −1.1
28.7	26.74 .79	50.9 0.6	16.07 .35	58.7 −0.6	39.32 .31	3.9 0.7	50.05 1.60	11.0 −0.4
Mar. 10.7	27.53 .77	51.7 1.0	16.42 .34	58.4 0.0	39.62 .30	3.4 −0.3	51.66 1.59	10.9 +0.2
20.7	28.28 .74	52.9 1.3	16.76 .32	58.8 +0.6	39.92 .29	3.2 +0.1	53.23 1.52	11.4 0.8
30.7	29.01 .70	54.4 1.6	17.08 .30	59.7 1.2	40.20 .27	3.5 0.4	54.70 1.40	12.6 1.4
Apr. 9.6	29.68 +.65	56.2 −1.9	17.37 +.26	61.2 +1.7	40.46 +.26	4.1 +0.8	56.02+1.23	14.3 +2.0
19.6	30.30 .58	58.3 2.2	17.63 .24	63.1 2.1	40.71 .24	5.0 1.1	57.16 1.02	16.5 2.4
29.6	30.85 .51	60.6 2.4	17.86 .21	65.3 2.4	40.94 .21	6.2 1.3	58.06 .77	19.1 2.8
May 9.5	31.33 .44	63.0 2.5	18.05 .17	67.9 2.6	41.14 .18	7.6 1.5	58.70 .51	22.0 3.0
19.5	31.72 .35	65.6 2.6	18.20 .13	70.6 2.7	41.31 .16	9.2 1.6	59.08 +.23	25.1 3.1
29.5	32.03 +.26	68.2 −2.6	18.30 +.08	73.4 +2.8	41.45 +.13	10.8 +1.7	59.17 −.05	28.3 +3.2
June 8.5	32.24 .16	70.9 2.6	18.37 +.04	76.3 2.7	41.56 .09	12.5 1.7	58.98 .33	31.5 3.1
18.4	32.35 +.06	73.4 2.5	18.38 .00	79.0 2.6	41.63 .06	14.2 1.6	58.51 .60	34.6 3.0
28.4	32.36 −.04	75.9 2.4	18.36 −.05	81.5 2.4	41.67 +.02	15.7 1.5	57.79 .85	37.5 2.8
July 8.4	32.28 .14	78.2 2.2	18.29 .09	83.9 2.2	41.67 −.02	17.2 1.4	56.82 1.08	40.1 2.5
18.4	32.09 −.23	80.2 −1.9	18.18 −.13	85.9 +1.9	41.63 −.05	18.5 +1.2	55.63−1.28	42.4 +2.1
28.3	31.81 .31	82.0 1.5	18.03 .16	87.6 1.5	41.56 .08	19.6 1.0	54.25 1.46	44.2 1.7
Aug. 7.3	31.47 .38	83.3 1.2	17.85 .19	88.9 1.1	41.46 .11	20.5 0.8	52.71 1.60	45.7 1.2
17.3	31.05 .44	84.3 0.7	17.64 .22	89.8 0.7	41.34 .14	21.2 0.6	51.04 1.71	46.7 0.7
27.2	30.59 .47	84.8 −0.2	17.41 .24	90.3 +0.3	41.19 .15	21.7 0.4	49.29 1.78	47.2 +0.2
Sept. 6.2	30.10 −.49	84.8 +0.2	17.17 −.24	90.4 −0.2	41.03 −.16	22.0 +0.1	47.48−1.81	47.2 −0.3
16.2	29.61 .48	84.3 0.7	16.93 .24	90.0 0.6	40.86 .17	22.0 −0.1	45.66 1.81	46.6 0.8
26.2	29.14 .45	83.4 1.2	16.69 .23	89.1 1.1	40.69 .16	21.7 0.4	43.87 1.76	45.6 1.3
Oct. 6.1	28.72 .39	82.0 1.6	16.47 .21	87.8 1.5	40.54 .14	21.2 0.7	42.15 1.66	44.1 1.7
16.1	28.37 .31	80.3 1.9	16.28 .17	86.1 1.9	40.41 .11	20.4 0.9	40.54 1.53	42.2 2.2
26.1	28.10 −.21	78.2 +2.2	16.12 −.13	83.9 −2.3	40.31 −.08	19.3 −1.2	39.09−1.35	39.8 −2.6
Nov. 5.1	27.94 −.10	75.8 2.4	16.01 .08	81.4 2.7	40.25 −.04	18.0 1.4	37.83 1.14	37.0 2.9
15.0	27.91 +.02	73.3 2.5	15.95 −.03	78.6 3.0	40.24 +.01	16.5 1.7	36.81 .89	33.9 3.2
25.0	27.99 .15	70.8 2.5	15.95 +.03	75.5 3.2	40.27 .06	14.7 1.9	36.06 .61	30.5 3.4
Dec. 5.0	28.21 .28	68.3 2.4	16.01 .09	72.2 3.3	40.35 .10	12.7 2.0	35.59 −.31	27.0 3.5
14.9	28.55 +.40	65.9 +2.2	16.13 +.15	68.8 −3.4	40.48 +.15	10.7 −2.1	35.44 .00	23.4 −3.6
24.9	29.00 .51	63.8 2.0	16.31 .20	65.5 3.3	40.65 .19	8.5 2.2	35.60 +.31	19.8 3.5
34.9	29.56 +.60	62.0 +1.7	16.53 +.25	62.2 −3.1	40.87 +.23	6.3 −2.2	36.06 +.62	16.4 −3.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*d* Herculis.		*a*¹ Herculis.		*b* Ophiuchi.		*β* Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m 16 57	° ′ +33 42	h m 17 9	° ′ +14 30	h m 17 19	° ′ −24 4	h m 17 28	° ′ +52 22
	s	″	s	″	s	″	s	″
(Dec. 30.9)	39.97 +.21	65.3 −3.2	47.35 +.20	29.7 −2.4	52.04 +.23	45.3 −0.2	0.15 +.17	33.5 −3.6
Jan. 9.9	40.20 .25	62.3 2.9	47.57 .23	27.3 2.3	52.29 .27	45.6 0.3	0.36 .24	30.0 3.4
19.9	40.47 .28	59.5 2.6	47.82 .26	25.1 2.1	52.58 .30	46.0 0.4	0.62 .29	26.8 3.1
29.8	40.77 .31	57.0 2.3	48.10 .28	23.1 1.9	52.88 .32	46.4 0.5	0.94 .34	23.9 2.7
Feb. 8.8	41.08 .33	54.9 1.8	48.39 .30	21.4 1.5	53.21 .33	46.9 0.5	1.30 .37	21.4 2.2
18.8	41.42 +.34	53.4 −1.3	48.69 +.31	20.1 −1.2	53.55 +.34	47.4 −0.5	1.69 +.40	19.6 −1.6
28.8	41.76 .34	52.4 0.7	49.00 .31	19.0 0.8	53.89 .34	47.9 0.5	2.09 .41	18.3 0.9
Mar. 10.7	42.09 .33	52.0 −0.1	49.30 .30	18.5 −0.3	54.23 .34	48.3 0.4	2.51 .42	17.7 −0.3
20.7	42.42 .32	52.1 +0.4	49.60 .29	18.4 +0.1	54.56 .33	48.7 0.3	2.93 .41	17.7 +0.4
30.7	42.73 .30	52.8 1.0	49.89 .28	18.7 0.5	54.89 .32	49.0 0.3	3.33 .39	18.4 1.0
Apr. 9.6	43.02 +.28	54.1 +1.5	50.17 +.27	19.4 +0.9	55.21 +.31	49.3 −0.2	3.71 +.37	19.7 +1.6
19.6	43.29 .25	55.8 1.9	50.43 .25	20.5 1.2	55.51 .29	49.4 0.2	4.06 .33	21.5 2.1
29.6	43.52 .22	57.8 2.2	50.66 .22	21.9 1.5	55.79 .27	49.6 0.1	4.38 .29	23.8 2.5
May 9.6	43.73 .19	60.2 2.5	50.88 .20	23.6 1.7	56.05 .26	49.7 0.1	4.65 .24	26.5 2.8
19.5	43.90 .15	62.7 2.6	51.06 .17	25.4 1.8	56.28 .22	49.8 0.1	4.86 .19	29.5 3.1
29.5	44.03 +.11	65.4 +2.7	51.22 +.14	27.3 +1.9	56.48 +.18	49.9 −0.1	5.03 +.14	32.7 +3.2
June 8.5	44.12 .07	68.1 2.7	51.34 .10	29.3 2.0	56.64 .15	50.1 0.1	5.14 .08	35.9 3.2
18.5	44.17 +.03	70.8 2.6	51.42 .07	31.2 1.9	56.77 .11	50.2 0.2	5.19 +.02	39.1 3.1
28.4	44.17 −.02	73.3 2.4	51.47 +.03	33.1 1.8	56.86 .07	50.4 0.2	5.17 −.04	42.2 3.0
July 8.4	44.14 .06	75.6 2.2	51.48 −.01	34.9 1.7	56.91 +.03	50.6 0.2	5.10 .10	45.1 2.8
18.4	44.06 −.10	77.7 +1.9	51.45 −.05	36.4 +1.5	56.91 −.02	50.8 −0.2	4.97 −.16	47.8 +2.5
28.3	43.94 .13	79.5 1.6	51.39 .08	37.8 1.2	56.88 .06	50.9 0.2	4.79 .21	50.1 2.2
Aug. 7.3	43.79 .16	81.0 1.3	51.29 .11	38.9 0.9	56.80 .09	51.1 0.1	4.56 .26	52.1 1.8
17.3	43.61 .19	82.0 0.9	51.16 .14	39.8 0.7	56.69 .12	51.2 −0.1	4.29 .29	53.7 1.3
27.3	43.41 .21	82.7 0.5	51.01 .16	40.4 0.5	56.55 .15	51.2 0.0	3.98 .32	54.8 0.9
Sept. 6.2	43.19 −.22	83.0 +0.1	50.84 −.17	40.8 +0.2	56.39 −.16	51.2 +0.1	3.65 −.34	55.4 +0.4
16.2	42.97 .22	82.8 −0.4	50.66 .18	40.8 −0.1	56.22 .17	51.1 0.1	3.30 .35	55.5 −0.1
26.2	42.74 .21	82.2 0.8	50.49 .17	40.6 0.4	56.05 .17	51.0 0.2	2.95 .34	55.1 0.6
Oct. 6.2	42.54 .20	81.2 1.2	50.32 .15	40.0 0.7	55.89 .15	50.7 0.2	2.61 .33	54.2 1.1
16.1	42.35 .17	79.8 1.6	50.18 .13	39.2 1.0	55.75 .12	50.5 0.3	2.30 .30	52.8 1.6
26.1	42.20 −.13	78.0 −2.0	50.06 −.10	38.0 −1.3	55.64 −.09	50.2 +0.3	2.02 −.26	50.9 −2.1
Nov. 5.1	42.09 .09	75.7 2.4	49.99 .06	36.6 1.6	55.57 −.05	49.9 0.3	1.79 .21	48.6 2.5
15.0	42.02 −.04	73.2 2.7	49.95 −.01	34.9 1.8	55.55 .00	49.6 0.2	1.61 .15	45.9 2.9
25.0	42.01 +.02	70.4 2.9	49.96 +.04	32.9 2.0	55.58 +.05	49.4 0.2	1.49 .08	42.8 3.2
Dec. 5.0	42.06 .07	67.4 3.1	50.02 .08	30.8 2.2	55.66 .11	49.3 +0.1	1.45 −.01	39.5 3.4
15.0	42.16 +.13	64.2 −3.2	50.12 +.13	28.5 −2.3	55.79 +.16	49.3 −0.1	1.47 +.06	35.9 −3.6
24.9	42.32 .18	61.1 3.2	50.28 .17	26.1 2.4	55.98 .20	49.4 0.2	1.57 .13	32.3 3.6
34.9	42.52 +.23	57.9 −3.1	50.47 +.21	23.8 −2.3	56.20 +.24	49.6 −0.2	1.73 +.20	28.8 −3.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Ophiuchi.		ω Draconis.		μ Herculis.		ψ^1 Draconis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 17 29	+12° 37′	h m 17 37	+68° 47′	h m 17 42	+27° 46′	h m 17 43	+72° 11′
	s	″	s	″	s	″	s	″
(Dec. 30.9)	59.30 +.18	63.7 −2.3	30.92 +.16	71.2 −3.6	16.97 +.16	46.0 −2.9	45.24 +.15	49.3 −3.6
Jan. 9.9	59.50 .22	61.5 2.2	31.14 .28	67.6 3.5	17.15 .20	43.1 2.8	45.46 .28	45.7 3.5
19.9	59.73 .25	59.3 2.0	31.47 .38	64.3 3.2	17.37 .24	40.4 2.6	45.81 .41	42.4 3.2
29.9	59.99 .27	57.4 1.8	31.90 .47	61.3 2.8	17.62 .27	37.9 2.3	46.28 .52	39.3 2.8
Feb. 8.8	60.27 .29	55.7 1.5	32.41 .54	58.7 2.3	17.90 .29	35.8 1.9	46.84 .61	36.8 2.3
18.8	60.57 +.30	54.3 −1.2	32.98 +.59	56.8 −1.7	18.20 +.30	34.0 −1.5	47.49 +.62	34.7 −1.7
28.8	60.87 .30	53.3 0.8	33.60 .63	55.4 1.0	18.51 .31	32.8 1.0	48.20 .72	33.3 1.1
Mar. 10.7	61.17 .30	52.7 −0.4	34.24 .64	54.7 −0.3	18.83 .32	32.1 −0.4	48.94 .74	32.5 −0.4
20.7	61.47 .30	52.6 0.0	34.88 .64	54.7 +0.3	19.15 .31	31.9 +0.1	49.68 .74	32.4 +0.2
30.7	61.77 .29	52.8 +0.4	35.51 .62	55.4 1.0	19.46 .30	32.3 0.6	50.42 .71	33.0 0.9
Apr. 9.7	62.05 +.28	53.5 +0.8	36.10 +.57	56.7 +1.6	19.76 +.29	33.2 +1.1	51.11 +.66	34.2 +1.5
19.6	62.32 .26	54.5 1.2	36.64 .51	58.5 2.1	20.05 .28	34.5 1.5	51.75 .59	35.9 2.0
29.6	62.57 .24	55.9 1.5	37.12 .43	60.9 2.5	20.31 .25	36.3 1.9	52.30 .51	38.2 2.5
May 9.6	62.80 .22	57.4 1.7	37.51 .35	63.6 2.9	20.55 .23	38.4 2.2	52.76 .41	40.9 2.8
19.6	63.00 .19	59.2 1.8	37.82 .26	66.7 3.2	20.77 .20	40.7 2.4	53.12 .30	43.9 3.1
29.5	63.18 +.16	61.1 +1.9	38.03 +.16	69.9 +3.3	20.94 +.16	43.2 +2.5	53.36 +.18	47.1 +3.2
June 8.5	63.32 .12	63.0 1.9	38.14 +.06	73.3 3.4	21.08 .12	45.8 2.6	53.48 +.06	50.5 3 3
18.5	63.43 .08	64.9 1.9	38.14 −.05	76.7 3.3	21.19 .08	48.3 2.6	53.48 −.06	53.8 3.3
28.4	63.49 .05	66.8 1.8	38.05 .15	79.9 3.2	21.25 +.04	50.9 2.5	53.36 .18	57.1 3.2
July 8.4	63.52 +.01	68.5 1.7	37.85 .25	83.0 3.0	21.26 .00	53.3 2.3	53.12 .30	60.2 3.0
18.4	63.51 −.03	70.1 +1.5	37.55 −.34	85.8 +2.7	21.24 −.05	55.5 +2.1	52.77 −.41	63.1 +2.7
28.4	63.46 .07	71.5 1.3	37.17 .42	88.4 2.3	21.17 .09	57.4 1.8	52.31 .50	65.6 2.4
Aug. 7.3	63.38 .10	72.7 1.1	36.72 .49	90.5 1.9	21.06 .12	59.1 1.5	51.76 .59	67.8 2.0
17.3	63.26 .13	73.6 0.8	36.19 .55	92.2 1.5	20.92 .16	60.5 1.2	51.13 .66	69.5 1.5
27.3	63.12 .15	74.3 0.6	35.62 .60	93.4 1.0	20.75 .18	61.5 0.8	50.43 .72	70.8 1.1
Sept. 6.3	62.96 −.17	74.7 +0.3	35.00 −.63	94.2 +0.5	20.56 −.20	62.1 +0.4	49.69 −.76	71.7 +0.6
16.2	62.79 .17	74.9 0.0	34.36 .64	94.4 0.0	20.35 .21	62.4 +0.1	48.92 .78	72.0 +0.1
26.2	62.61 .17	74.8 −0.3	33.71 .64	94.1 −0.6	20.14 .21	62.2 −0.3	48.14 .77	71.8 −0.5
Oct. 6.2	62.44 .16	74.3 0.6	33.07 .62	93.3 1.1	19.94 .20	61.7 0.7	47.37 .75	71.0 1.0
16.1	62.29 .14	73.6 0.9	32.47 .58	91.9 1.6	19.75 .18	60.8 1.1	46.63 .71	69.7 1.5
26.1	62.17 −.11	72.6 −1.1	31.91 −.52	90.1 −2.1	19.58 −.15	59.5 −1.5	45.95 −.65	68.0 −2.0
Nov. 5.1	62.08 .07	71.4 1.4	31.43 .45	87.8 2.5	19.45 .11	57.8 1.9	45.34 .56	65.7 2.5
15.1	62.02 −.03	69.8 1.7	31.02 .36	85.1 2.9	19.36 .07	55.7 2.2	44.82 .46	63.1 2.9
25.0	62.02 +.02	68.1 1.9	30.71 .25	82.0 3.3	19.32 −.02	53.4 2.5	44.42 .34	60.0 3.2
Dec. 5.0	62.06 .07	66.1 2.1	30.51 .14	78.6 3.5	19.32 +.03	50.8 2.7	44.14 .21	56.7 3.4
15.0	62.15 +.11	63.9 −2.2	30.42 −.03	75.0 −3.6	19.38 +.08	48.0 −2.8	43.99 −.08	53.1 −3.5
25.0	62.28 .16	61.7 2.2	30.46 +.09	71.3 3.6	19.49 .13	45.1 2.9	43.98 +.06	49.5 3.6
34.9	62.46 +.20	59.5 −2.3	30.61 +.21	67.7 −3.6	19.64 +.18	42.2 −2.9	44.11 +.20	45.9 −3.6

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Draconis.		γ² Sagittarii.		μ Sagittarii.		η Serpentis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*
	$17^{h}\ 54^{m}$	$+51°\ 29'$	$17^{h}\ 58^{m}$	$-30°\ 25'$	$18^{h}\ 7^{m}$	$-21°\ 5'$	$18^{h}\ 15^{m}$	$-\ 2°\ 55'$
	s	″	s	″	s	″	s	″
Jan. 0.0	6.44 +.13	52.6 −3.5	58.04 +.20	38.2 +0.3	23.73 +.17	19.2 −0.2	47.89 +.15	42.6 −1.3
9.9	6.61 .20	49.1 3.4	58.26 .24	37.9 0.3	23.92 .22	19.4 0.2	48.05 .19	43.9 1.3
19.9	6.83 .25	45.8 3.2	58.52 .28	37.7 0.2	24.16 .25	19.7 0.3	48.26 .22	45.2 1.2
29.9	7.12 .30	42.8 2.8	58.81 .31	37.5 0.1	24.42 .28	19.9 0.3	48.49 .24	46.4 1.1
Feb. 8.9	7.44 .34	40.2 2.3	59.13 .33	37.4 +0.1	24.71 .30	20.2 0.3	48.75 .26	47.4 1.0
18.8	7.80 +.37	38.1 −1.8	59.47 +.34	37.4 0.0	25.02 +.31	20.4 −0.2	49.02 +.28	48.3 −0.8
28.8	8.19 .40	36.6 1.2	59.81 .35	37.4 0.0	25.34 .32	20.6 −0.1	49.31 .29	48.9 0.5
Mar. 10.8	8.59 .41	35.7 −0.6	60.17 .36	37.4 0.0	25.66 .33	20.7 0.0	49.61 .30	49.3 −0.2
20.8	9.00 .41	35.4 +0.1	60.52 .36	37.5 0.0	25.99 .33	20.7 0.0	49.91 .30	49.4 0.0
30.7	9.41 .40	35.9 0.7	60.88 .35	37.5 0.0	26.32 .33	20.6 +0.1	50.21 .30	49.3 +0.3
Apr. 9.7	9.79 +.38	36.9 +1.3	61.23 +.34	37.5 −0.1	26.65 +.32	20.4 +0.2	50.51 +.30	48.8 +0.5
19.7	10.16 .35	38.5 1.9	61.57 .33	37.6 0.1	26.97 .31	20.2 0.3	50.80 .29	48.2 0.8
29.6	10.50 .32	40.6 2.3	61.89 .31	37.7 0.1	27.27 .29	19.9 0.3	51.08 .28	47.3 1.0
May 9.6	10.79 .28	43.2 2.7	62.19 .29	37.8 0.2	27.55 .28	19.6 0.3	51.35 .26	46.2 1.1
19.6	11.05 .23	46.1 3.0	62.47 .26	38.0 0.2	27.82 .25	19.2 0.3	51.59 .23	45.0 1.2
29.6	11.25 +.17	49.2 +3.2	62.72 +.23	38.3 −0.3	28.06 +.22	18.9 +0.3	51.82 +.21	43.8 +1.3
June 8.5	11.39 .12	52.4 3.3	62.94 .20	38.6 0.4	28.27 .19	18.7 0.2	52.01 .18	42.5 1.3
18.5	11.48 +.06	55.7 3.2	63.12 .16	39.0 0.4	28.44 .15	18.5 0.2	52.17 .14	41.3 1.2
28.5	11.51 .00	58.9 3.2	63.25 .11	39.4 0.5	28.57 .11	18.3 +0.1	52.29 .10	40.1 1.1
July 8.4	11.48 −.06	62.0 3.0	63.34 .06	39.9 0.5	28.66 .07	18.3 0.0	52.37 .06	39.0 1.0
18.4	11.39 −.12	64.8 +2.7	63.38 +.02	40.4 −0.5	28.71 +.02	18.3 0.0	52.42 +.02	38.0 +0.9
28.4	11.24 .17	67.4 2.4	63.37 −.03	41.0 0.5	28.71 −.02	18.3 −0.1	52.42 −.02	37.1 0.8
Aug. 7.4	11.04 .22	69.7 2.0	63.32 .07	41.5 0.5	28.67 .06	18.4 0.1	52.38 .06	36.4 0.7
17.3	10.79 .27	71.5 1.6	63.23 .11	41.9 0.4	28.59 .10	18.5 0.1	52.30 .09	35.7 0.5
27.3	10.50 .30	73.0 1.2	63.10 .14	42.3 0.3	28.48 .13	18.6 0.1	52.19 .12	35.3 0.4
Sept. 6.3	10.19 −.32	73.9 +0.7	62.94 −.17	42.6 −0.2	28.33 −.15	18.7 −0.1	52.05 −.15	35.0 +0.2
16.3	9.85 .34	74.4 +0.2	62.76 .18	42.7 −0.1	28.17 .16	18.8 −0.1	51.90 .16	34.8 +0.1
26.2	9.51 .34	74.4 −0.3	62.58 .18	42.7 0.0	28.00 .17	18.8 0.0	51.73 .16	34.8 −0.1
Oct. 6.2	9.17 .33	73.8 0.8	62.40 .17	42.6 +0.2	27.83 .16	18.8 0.0	51.57 .16	35.0 0.2
16.2	8.85 .31	72.8 1.3	62.23 .15	42.4 0.3	27.68 .15	18.7 +0.1	51.42 .14	35.2 0.3
26.1	8.56 −.27	71.2 −1.8	62.09 −.12	42.0 +0.4	27.54 −.12	18.7 +0.1	51.28 −.12	35.7 −0.5
Nov. 5.1	8.31 .23	69.2 2.2	61.98 .08	41.5 0.5	27.44 .08	18.6 0.1	51.18 .09	36.2 0.6
15.1	8.10 .17	66.8 2.6	61.92 −.03	41.0 0.5	27.38 −.04	18.5 +0.1	51.11 .05	37.0 0.8
25.1	7.96 .11	63.9 3.0	61.91 +.02	40.5 0.5	27.37 +.01	18.5 0.0	51.07 −.01	37.8 0.9
Dec. 5.0	7.88 −.05	60.8 3.3	61.96 .07	39.9 0.5	27.40 .06	18.5 0.0	51.09 +.04	38.8 1.1
15.0	7.87 +.02	57.4 −3.4	62.06 +.12	39.4 +0.5	27.48 +.11	18.5 −0.1	51.15 +.08	40.0 −1.2
25.0	7.92 .09	53.9 3.5	62.20 .17	39.0 0.4	27.61 .15	18.6 0.1	51.25 .12	41.2 1.3
35.0	8.04 +.15	50.4 −3.5	62.40 +.22	38.6 +0.3	27.78 +.19	18.8 −0.2	51.40 +.17	42.5 −1.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	1 Aquilæ.		α Lyræ. (*Vega*.)		β Lyræ.		σ Sagittarii.	
	Right Ascension.	Declination *South*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *North*.	Right Ascension.	Declination *South*.
	h m 18 29	° ′ − 8 19	h m 18 33	° ′ +38 40	h m 18 46	° ′ +33 13	h m 18 48	° ′ −26 25
	s	″	s	″	s	″	s	″
Jan. 0.0	24.71 +.14	14.7 −0.9	19.03 +.09	56.2 −3.1	8.12 +.09	73.3 −2.9	39.81 +.14	51.3 +0.3
10.0	24.87 .18	15.6 0.9	19.14 .14	53.1 3.1	8.23 .13	70.3 2.9	39.97 .18	51.0 0.3
19.9	25.07 .21	16.5 0.9	19.31 .19	50.0 3.0	8.38 .17	67.4 2.8	40.17 .22	50.7 0.3
29.9	25.30 .24	17.4 0.8	19.52 .23	47.1 2.7	8.58 .21	64.7 2.6	40.41 .25	50.4 0.3
Feb. 8.9	25.55 .26	18.1 0.7	19.77 .27	44.6 2.3	8.81 .24	62.3 2.3	40.68 .28	50.2 0.3
18.8	25.82 +.28	18.7 −0.5	20.06 +.30	42.5 −1.9	9.07 +.27	60.2 −1.9	40.97 +.30	49.9 +0.3
28.8	26.11 .29	19.2 0.3	20.36 .32	40.8 1.4	9.36 .30	58.6 1.4	41.28 .32	49.6 0.3
Mar. 10.8	26.41 .30	19.4 −0.1	20.69 .33	39.7 0.8	9.66 .31	57.5 0.8	41.60 .33	49.2 0.4
20.8	26.71 .31	19.4 +0.1	21.03 .34	39.2 −0.2	9.98 .32	56.9 −0.3	41.93 .34	48.9 0.4
30.7	27.02 .31	19.2 0.3	21.38 .34	39.3 +0.4	10.31 .33	56.9 +0.3	42.28 .34	48.4 0.4
Apr. 9.7	27.33 +.30	18.7 +0.5	21.72 +.34	39.9 +1.0	10.64 +.33	57.5 +0.8	42.62 +.34	48.0 +0.5
19.7	27.63 .30	18.1 0.7	22.05 .33	41.2 1.5	10.96 .32	58.6 1.4	42.96 .33	47.5 0.5
29.7	27.93 .29	17.3 0.9	22.37 .31	42.9 1.9	11.27 .30	60.2 1.9	43.30 .32	47.1 0.4
May 9.6	28.20 .27	16.4 1.0	22.67 .28	45.1 2.3	11.57 .28	62.2 2.2	43.62 .31	46.7 0.4
19.6	28.47 .25	15.4 1.0	22.93 .25	47.6 2.7	11.84 .26	64.6 2.5	43.93 .29	46.3 0.3
29.6	28.71 +.22	14.3 +1.0	23.17 +.21	50.4 +2.9	12.08 +.23	67.3 +2.7	44.21 +.27	46.0 +0.2
June 8.5	28.92 .19	13.3 1.0	23.36 .17	53.4 3.0	12.28 .19	70.1 2.9	44.46 .24	45.8 +0.1
18.5	29.09 .16	12.3 1.0	23.51 .13	56.5 3.1	12.45 .14	73.0 2.9	44.68 .20	45.7 0.0
28.5	29.23 .12	11.3 0.9	23.61 .08	59.5 3.0	12.57 .10	76.0 2.9	44.86 .16	45.7 −0.1
July 8.5	29.34 .08	10.4 0.8	23.67 +.03	62.5 2.9	12.65 +.05	78.8 2.8	45.00 .11	45.9 0.2
18.4	29.39 +.04	9.7 +0.7	23.67 −.02	65.4 +2.8	12.67 .00	81.6 +2.7	45.08 +.06	46.1 −0.3
28.4	29.41 .00	9.0 0.6	23.62 .07	68.1 2.5	12.65 −.04	84.2 2.5	45.12 +.02	46.4 0.3
Aug. 7.4	29.39 −.04	8.5 0.5	23.52 .12	70.5 2.2	12.58 .09	86.5 2.2	45.12 −.03	46.8 0.4
17.4	29.32 .08	8.1 0.4	23.38 .16	72.5 1.9	12.47 .13	88.5 1.8	45.07 .07	47.2 0.4
27.3	29.22 .11	7.8 0.2	23.20 .20	74.2 1.5	12.32 .17	90.2 1.5	44.97 .11	47.6 0.4
Sept. 6.3	29.09 −.14	7.6 +0.1	22.99 −.22	75.5 +1.1	12.14 −.19	91.5 +1.1	44.84 −.14	48.0 −0.3
16.3	28.94 .15	7.5 0.0	22.76 .24	76.4 0.7	11.93 .21	92.5 0.7	44.69 .16	48.3 0.3
26.2	28.78 .16	7.6 −0.1	22.51 .25	76.8 +0.2	11.71 .22	93.0 +0.3	44.52 .17	48.5 0.2
Oct. 6.2	28.62 .16	7.7 0.2	22.25 .25	76.8 −0.3	11.48 .23	93.0 −0.1	44.34 .17	48.7 −0.1
16.2	28.46 .15	7.9 0.2	22.01 .24	76.3 0.7	11.26 .22	92.7 0.6	44.17 .16	48.8 0.0
26.2	28.33 −.12	8.1 −0.3	21.78 −.22	75.4 −1.2	11.05 −.20	91.9 −1.0	44.01 −.14	48.7 +0.1
Nov. 5.1	28.22 .09	8.5 0.4	21.58 .18	73.9 1.6	10.86 .17	90.7 1.4	43.89 .11	48.6 0.2
15.1	28.14 .06	9.0 0.5	21.41 .14	72.1 2.0	10.71 .13	89.0 1.8	43.79 .07	48.4 0.2
25.1	28.10 −.02	9.6 0.6	21.29 .10	69.9 2.4	10.60 .09	87.0 2.2	43.74 −.03	48.1 0.3
Dec. 5.1	28.11 +.02	10.3 0.7	21.22 −.05	67.3 2.7	10.53 −.04	84.7 2.5	43.73 +.02	47.8 0.3
15.0	28.16 +.07	11.0 −0.8	21.20 +.01	64.4 −2.9	10.51 .00	82.1 −2.7	43.78 +.07	47.4 +0.3
25.0	28.26 .12	11.9 0.9	21.23 .06	61.4 3.0	10.54 +.05	79.3 2.9	43.87 .11	47.1 0.3
35.0	28.40 +.15	12.8 −0.9	21.32 +.12	58.3 −3.1	10.62 +.11	76.4 −3.0	44.00 +.16	46.8 +0.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	σ Octantis.		50 Draconis.		ζ Aquilæ.		d Sagittarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h 18	° ′ −89 15	h m 18 49	° ′ +75 18	h m 19 0	° ′ +13 42	h m 19 11	° ′ −19 8
	m s	″	s	″	s	″	s	″
Jan. 0.0	47 39.6+ 4.0	54.8 +3.4	41.76 −.11	23.9 −3.5	30.65 +.09	12.4 −2.0	24.33 +.12	39.2 −0.1
10.0	47 45.3 7.2	51.4 3.3	41.74 +.07	20.4 3.5	30.76 .13	10.4 2.0	24.47 .15	39.3 −0.1
20.0	47 54.0 10.1	48.2 3.1	41.90 .23	16.9 3.4	30.91 .17	8.4 1.9	24.63 .19	39.4 0.0
29.9	48 5.6 12.8	45.1 2.9	42.21 .39	13.6 3.2	31.09 .20	6.5 1.8	24.84 .22	39.4 0.0
Feb. 8.9	48 19.6 15.1	42.4 2.6	42.67 .53	10.5 2.8	31.31 .23	4.7 1.6	25.07 .25	39.4 +0.1
18.9	48 35.7+16.9	40.1 +2.2	43.27 +.65	7.9 −2.4	31.55 +.25	3.3 −1.3	25.33 +.27	39.3 +0.1
28.8	48 53.5 18.4	38.1 1.7	43.97 .75	5.7 1.8	31.80 .27	2.2 0.9	25.61 .29	39.1 0.2
Mar. 10.8	49 12.5 19.4	36.6 1.3	44.76 .82	4.2 1.2	32.08 .28	1.5 0.5	25.90 .30	38.8 0.4
20.8	49 32.3 20.0	35.6 0.8	45.61 .86	3.2 −0.6	32.37 .29	1.2 −0.1	26.21 .31	38.3 0.5
30.8	49 52.6 20.2	35.0 +0.3	46.48 .87	3.0 +0.1	32.67 .30	1.3 +0.3	26.53 .32	37.8 0.6
Apr. 9.7	50 12.8+20.0	35.0 −0.2	47.36 +.86	3.4 +0.7	32.97 +.30	1.9 +0.7	26.85 +.33	37.2 +0.7
19.7	50 32.6 19.4	35.4 0.7	48.20 .81	4.4 1.3	33.27 .30	2.8 1.1	27.18 .33	36.5 0.8
29.7	50 51.5 18.4	36.3 1.1	48.99 .75	6.0 1.9	33.57 .29	4.1 1.5	27.50 .32	35.7 0.8
May 9.7	51 9.3 17.0	37.7 1.5	49.69 .65	8.1 2.4	33.85 .28	5.8 1.8	27.82 .31	34.9 0.8
19.6	51 25.5 15.2	39.4 1.9	50.29 .54	10.7 2.8	34.12 .26	7.6 2.0	28.12 .29	34.0 0.8
29.6	51 39.8+13.2	41.5 −2.2	50.78 +.42	13.7 +3.1	34.37 +.23	9.7 +2.1	28.41 +.27	33.3 +0.7
June 8.6	51 51.8 10.8	44.0 2.5	51.13 .28	16.9 3.3	34.59 .20	11.8 2.2	28.66 .24	32.6 0.6
18.5	52 1.4 8.2	46.7 2.8	51.34 +.14	20.3 3.4	34.78 .17	14.0 2.2	28.89 .21	32.0 0.5
28.5	52 8.2 5.4	49.6 2.9	51.40 −.01	23.7 3.4	34.93 .13	16.3 2.2	29.08 .17	31.5 0.4
July 8.5	52 12.2+ 2.5	52.6 3.0	51.31 .16	27.1 3.4	35.04 .09	18.4 2.1	29.23 .13	31.1 0.3
18.5	52 13.2− 0.6	55.6 −3.0	51.08 −.30	30.5 +3.3	35.10 +.05	20.4 +1.9	29.34 +.08	30.8 +0.2
28.4	52 11.1 3.5	58.6 2.9	50.71 .44	33.6 3.1	35.13 .00	22.3 1.8	29.40 +.04	30.7 +0.1
Aug. 7.4	52 6.1 6.4	61.4 2.7	50.20 .57	36.6 2.8	35.11 −.04	23.9 1.6	29.41 −.01	30.7 0.0
17.4	51 58.3 9.1	63.9 2.4	49.57 .68	39.2 2.4	35.05 .08	25.4 1.3	29.38 .05	30.8 −0.1
27.4	51 47.9 11.4	66.2 2.0	48.85 .77	41.4 2.0	34.95 .11	26.6 1.1	29.31 .09	30.9 0.2
Sept. 6.3	51 35.5−13.3	67.9 −1.5	48.03 −.85	43.2 +1.6	34.82 −.14	27.5 +0.8	29.20 −.12	31.1 −0.2
16.3	51 21.2 14.8	69.2 1.0	47.14 .91	44.6 1.1	34.67 .16	28.1 0.5	29.06 .15	31.3 0.2
26.3	51 5.9 15.6	70.0 −0.5	46.21 .94	45.5 0.6	34.50 .17	28.5 +0.2	28.91 .16	31.5 0.2
Oct. 6.2	50 50.0 15.9	70.1 +0.1	45.26 .95	45.9 +0.1	34.32 .17	28.5 −0.1	28.74 .17	31.7 0.2
16.2	50 34.2 15.5	69.7 0.8	44.30 .94	45.7 −0.5	34.15 .16	28.3 0.4	28.58 .16	31.9 0.2
26.2	50 19.1−14.4	68.6 +1.4	43.37 −.90	44.9 −1.0	33.99 −.15	27.8 −0.7	28.42 −.14	32.1 −0.1
Nov. 5.2	50 5.4 12.7	66.9 1.9	42.50 .84	43.7 1.5	33.85 .13	26.9 1.0	28.29 .12	32.2 0.1
15.1	49 53.6 10.5	64.8 2.4	41.70 .75	41.9 2.0	33.73 .10	25.8 1.2	26.19 .08	32.3 0.1
25.1	49 44.4 7.8	62.1 2.8	41.01 .64	39.7 2.5	33.65 .06	24.5 1.5	28.12 −.04	32.4 0.1
Dec. 5.1	49 38.0 4.8	59.2 3.1	40.43 .51	37.0 2.9	33.61 −.02	22.9 1.7	28.10 .00	32.4 0.1
15.1	49 34.8− 1.5	55.9 +3.3	39.99 −.36	34.0 −3.2	33.62 +.03	21.1 −1.9	28.12 +.04	32.5 −0.1
25.0	49 34.9+ 1.8	52.5 3.4	39.71 .20	30.7 3.4	33.67 .07	19.2 2.0	28.18 .08	32.6 0.1
35.0	49 38.3+ 5.0	49.1 +3.4	39.60 −.03	27.3 −3.5	33.75 +.11	17.1 −2.0	28.29 +.13	32.7 −0.1

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*δ* Draconis.		*τ* Draconis.		*δ* Aquilæ.		*κ* Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 19 12	° ′ +67 28	h m 19 17	° ′ +73 9	h m 19 20	° ′ + 2 53	h m 19 31	° ′ − 7 15
	s	″	s	″	s	″	s	″
Jan. 0.0	27.93 −.07	24.1 −3.4	30.40 −.16	25.5 −3.4	7.65 +.08	63.4 −1.4	9.76 +.08	56.5 −0.8
10.0	27.91 +.04	20.6 3.5	30.31 −.01	22.1 3.5	7.75 .12	62.0 1.4	9.86 .12	57.3 0.8
20.0	28.00 .14	17.1 3.5	30.37 +.13	18.6 3.4	7.89 .16	60.7 1.3	10.00 .15	58.0 0.7
29.9	28.19 .24	13.7 3.3	30.57 .27	15.2 3.3	8.06 .19	59.4 1.2	10.17 .18	58.7 0.6
Feb. 8.9	28.49 .34	10.6 3.0	30.91 .40	12.0 3.0	8.26 .21	58.2 1.0	10.37 .21	59.3 0.5
18.9	28.87 +.42	7.8 −2.6	31.36 +.51	9.1 −2.6	8.49 +.24	57.3 −0.8	10.59 +.24	59.7 −0.3
28.9	29.33 .49	5.5 2.1	31.93 .61	6.7 2.1	8.74 .26	56.6 0.5	10.84 .26	59.9 −0.1
Mar. 10.8	29.85 .55	3.7 1.5	32.58 .69	4.9 1.5	9.00 .27	56.2 −0.2	11.11 .28	59.9 +0.1
20.8	30.42 .58	2.5 0.8	33.30 .74	3.6 0.9	9.29 .29	56.2 +0.1	11.39 .29	59.6 0.3
30.8	31.02 .60	2.0 −0.2	34.06 .77	3.0 −0.3	9.58 .30	56.5 0.4	11.69 .30	59.2 0.6
Apr. 9.8	31.63 +.60	2.2 +0.5	34.84 +.77	3.1 +0.3	9.88 +.30	57.0 +0.7	11.99 +.31	58.5 +0.8
19.7	32.23 .59	3.0 1.1	35.61 .75	3.8 1.0	10.18 .30	57.9 1.0	12.30 .31	57.6 1.0
29.7	32.80 .55	4.4 1.7	36.35 .71	5.1 1.6	10.48 .30	59.1 1.3	12.61 .31	56.5 1.1
May 9.7	33.34 .50	6.4 2.2	37.02 .64	7.0 2.1	10.78 .29	60.5 1.5	12.92 .30	55.3 1.2
19.6	33.81 .44	8.9 2.7	37.63 .56	9.4 2.6	11.06 .27	62.1 1.6	13.21 .29	54.0 1.3
29.6	34.22 +.36	11.7 +3.0	38.14 +.46	12.1 +2.9	11.33 +.25	63.8 +1.7	13.49 +.27	52.7 +1.4
June 8.6	34.55 .28	14.9 3.3	38.54 .34	15.2 3.2	11.57 .22	65.5 1.8	13.75 .24	51.3 1.3
18.6	34.78 .19	18.3 3.4	38.82 .22	18.6 3.4	11.78 .19	67.3 1.8	13.97 .21	50.0 1.3
28.5	34.92 +.09	21.8 3.5	38.98 +.09	22.1 3.5	11.95 .16	69.1 1.7	14.17 .18	48.7 1.2
July 8.5	34.97 −.01	25.3 3.5	39.01 −.04	25.6 3.5	12.09 .12	70.7 1.6	14.33 .14	47.6 1.1
18.5	34.91 −.10	28.8 +3.4	38.91 −.16	29.1 +3.4	12.19 +.07	72.3 +1.5	14.44 +.09	46.6 +0.9
28.5	34.76 .20	32.1 3.2	38.68 .29	32.4 3.3	12.24 +.03	73.6 1.3	14.51 +.05	45.7 0.8
Aug. 7.4	34.51 .29	35.2 3.0	38.33 .41	35.6 3.0	12.25 −.01	74.9 1.1	14.53 .00	45.0 0.6
17.4	34.17 .37	38.1 2.7	37.87 .51	38.5 2.7	12.22 .05	75.9 0.9	14.52 −.04	44.5 0.5
27.4	33.76 .45	40.6 2.3	37.31 .61	41.1 2.4	12.15 .09	76.7 0.7	14.46 .08	44.1 0.3
Sept. 6.3	33.28 −.51	42.7 +1.9	36.65 −.69	43.3 +2.0	12.04 −.12	77.4 +0.5	14.36 −.11	43.8 +0.2
16.3	32.75 .55	44.4 1.4	35.93 .75	45.1 1.5	11.91 .14	77.8 0.3	14.24 .13	43.7 +0.1
26.3	32.18 .58	45.6 0.9	35.16 .79	46.4 1.0	11.76 .16	78.0 +0.1	14.10 .15	43.7 0.0
Oct. 6.3	31.58 .60	46.3 +0.4	34.35 .81	47.2 +0.5	11.59 .16	78.1 −0.1	13.94 .16	43.8 −0.1
16.2	30.98 .60	46.4 −0.1	33.53 .82	47.5 0.0	11.43 .16	77.9 0.3	13.78 .15	44.0 0.2
26.2	30.39 −.57	46.0 −0.7	32.71 −.79	47.2 −0.6	11.28 −.14	77.6 −0.5	13.63 −.14	44.3 −0.3
Nov. 5.2	29.83 .53	45.0 1.2	31.94 .75	46.4 1.1	11.15 .12	77.0 0.6	13.50 .12	44.7 0.4
15.2	29.32 .48	43.5 1.7	31.21 .69	45.0 1.6	11.04 .09	76.3 0.8	13.39 .09	45.1 0.5
25.1	28.86 .42	41.5 2.2	30.57 .60	43.1 2.1	10.96 .06	75.3 1.0	13.31 .06	45.6 0.6
Dec. 5.1	28.49 .33	39.0 2.7	30.02 .50	40.7 2.6	10.92 −.02	74.3 1.2	13.27 −.02	46.3 0.6
15.1	28.20 −.24	36.2 −3.0	29.58 −.38	38.0 −2.9	10.92 +.02	73.1 −1.3	13.27 +.02	46.9 −0.7
25.0	28.01 .14	33.0 3.3	29.26 .24	34.8 3.2	10.96 .06	71.8 1.3	13.31 .06	47.7 0.7
35.0	27.93 −.03	29.6 −3.4	29.09 −.10	31.5 −3.4	11.04 +.10	70.4 −1.4	13.38 +.09	48.4 −0.8

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Aquilæ.		α Aquilæ. (*Altair.*)		ε Draconis.		β Aquilæ.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 19 41	+10° 21′	h m 19 45	+ 8° 35′	h m 19 48	+69° 59′	h m 19 50	+ 6° 8′
	s	″	s	″	s	″	s	″
Jan. 0.0	11.62 +.06	9.7 −1.7	35.12 +.05	9.8 −1.6	27.26 −.19	49.9 −3.2	4.83 +.05	22.7 −1.5
10.0	11.70 .09	8.0 1.7	35.19 .09	8.2 1.6	27.13 −.07	46.6 3.3	4.90 .09	21.2 1.5
20.0	11.81 .13	6.2 1.7	35.30 .13	6.6 1.6	27.12 +.04	43.1 3.4	5.01 .12	19.7 1.4
30.0	11.96 .16	4.6 1.6	35.45 .16	5.1 1.5	27.22 .16	39.7 3.3	5.15 .16	18.3 1.3
Feb. 8.9	12.13 .19	3.1 1.4	35.62 .19	3.7 1.3	27.44 .28	36.4 3.1	5.32 .19	17.0 1.1
18.9	12.34 +.22	1.8 −1.1	35.82 +.22	2.5 −1.0	27.77 +.38	33.4 −2.8	5.52 +.21	16.0 −0.9
28.9	12.57 .25	0.9 0.8	36.05 .24	1.7 0.7	28.20 .47	30.8 2.4	5.75 .24	15.2 0 6
Mar. 10.9	12.82 .26	0.2 0.4	36.30 .26	1.1 −0.4	28.72 .55	28.6 1.9	5.99 .26	14.7 −0.3
20.8	13.09 .28	0.0 −0.1	36.57 .28	0.9 0.0	29.30 .61	27.1 1.3	6.26 .27	14.5 0.0
30.8	13.38 .29	0.1 +0.3	36.86 .29	1.1 +0.4	29.93 .65	26.1 −0.6	6.54 .29	14.8 +0.4
Apr. 9.8	13.68 +.30	0.6 +0.7	37.16 +.30	1.6 +0.7	30.60 +.67	25.8 0.0	6.84 +.30	15.3 +0.7
19.7	13.98 .30	1.5 1.1	37.46 .30	2.5 1.1	31.27 .67	26.1 +0.7	7.14 .30	16.2 1.0
29.7	14.29 .30	2.8 1.4	37.77 .30	3.8 1.4	31.93 .64	27.1 1.3	7.45 .30	17.4 1.3
May 9.7	14.59 .29	4.3 1.7	38.07 .30	5.3 1.6	32.56 .60	28.7 1.8	7.75 .30	18.9 1.6
19.7	14.88 .28	6.1 1.9	38.36 .29	7.1 1.8	33.14 .55	30.8 2.3	8.04 .29	20.6 1.8
29.6	15.15 +.26	8.0 +2.0	38.64 +.27	9.0 +2.0	33.65 +.47	33.4 +2.7	8.32 +.27	22.4 +1.9
June 8.6	15.40 .24	10.1 2.1	38.90 .24	11.0 2.1	34.09 .39	36.3 3.1	8.58 .24	24.3 2.0
18.6	15.63 .21	12.3 2.1	39.12 .21	13.1 2.1	34.43 .29	39.6 3.4	8.81 .21	26.3 2.0
28.6	15.82 .17	14.4 2.1	39.32 .18	15.2 2.0	34.67 .19	43.1 3.5	9.01 .18	28.3 1.9
July 8.5	15.97 .13	16.5 2.0	39.48 .14	17.2 2.0	34.80 +.08	46.6 3.6	9.18 .14	30.2 1.8
18.5	16.07 +.09	18.5 +1.9	39.59 +.09	19.1 +1.9	34.82 −.03	50.2 +3.6	9.30 +.10	32.0 +1.7
28.5	16.14 +.04	20.4 1.7	39.66 .05	20.9 1.7	34.73 .14	53.8 3.5	9.37 .05	33.6 1.6
Aug. 7.4	16.16 .00	22.0 1.5	39.69 +.01	22.5 1.5	34.53 .25	57.2 3.3	9.40 +.01	35.1 1.4
17.4	16.14 −.04	23.5 1.3	39.67 −.04	23.9 1.3	34.24 .35	60.3 3.0	9.39 −.03	36.3 1.2
27.4	16.07 .08	24.7 1.1	39.62 .08	25.1 1.1	33.84 .44	63.3 2.7	9.34 .07	37.4 0.9
Sept. 6.4	15.98 −.11	25.7 +0.9	39.52 −.11	26.0 +0.8	33.37 −.51	65.8 +2.4	9.25 −.10	38.2 +0.7
16.3	15.85 .14	26.4 0.6	39.40 .13	26.8 0.6	32.82 .57	68.0 2.0	9.14 .13	38.8 0.5
26.3	15.70 .16	26.9 0.3	39.26 .15	27.2 0.3	32.22 .62	69.8 1.5	8.99 .15	39.2 +0.3
Oct. 6.3	15.53 .16	27.1 +0.1	39.10 .16	27.4 +0.1	31.57 .65	71.0 1.0	8.84 .16	39.4 0.0
16.3	15.37 .16	27.1 −0.2	38.93 .16	27.4 −0.2	30.91 .67	71.7 +0.5	8.68 .16	39.3 −0.2
26.2	15.21 −.15	26.8 −0.4	38.78 −.15	27.1 −0.4	30.24 −.66	71.9 −0.1	8.52 −.15	39.0 −0.4
Nov. 5.2	15.06 .13	26.2 0.7	38.63 .13	26.6 0.6	29.59 .64	71.6 0.6	8.38 .13	38.5 0.6
15.2	14.94 .11	25.4 0.9	38.51 .11	25.8 0.9	28.97 .59	70.6 1.2	8.26 .11	37.8 0.8
25.2	14.84 .08	24.4 1.2	38.41 .08	24.9 1.1	28.40 .53	69.1 1.8	8.16 .08	36.9 1.0
Dec. 5.1	14.78 .04	23.1 1.4	38.35 .04	23.7 1.3	27.91 .45	67.1 2.3	8.10 .05	35.8 1.2
15.1	14.75 −.01	21 6 −1.5	38.33 −.01	22.3 −1.4	27.49 −.36	64.6 −2.7	8.07 −.01	34.5 −1.3
25.1	14.77 +.03	20.0 1.6	38.34 +.03	20.8 1.5	27.18 .26	61.8 3.0	8.08 +.03	33.1 1.4
35.0	14.82 +.07	18.3 −1.7	38.39 +.07	19.3 −1.6	26.98 −.14	58.6 −3.3	8.13 +.07	31.7 −1.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Aquilæ.		α² Capricorni.		κ Cephei.		α Pavonis.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	19 58	+ 6 58	20 12	−12 52	20 12	+77 23	20 17	−57 4
	s	″	s	″	s	″	s	″
Jan. 0.1	56.21 +.04	35.5 −1.5	8.94 +.05	34.5 −0.3	20.34 −.47	31.4 −3.0	13.95 +.03	42.8 +2.2
10.0	56.27 .08	34.0 1.5	9.01 .08	34.8 0.3	19.96 .29	28.3 3.2	14.02 .10	40.5 2.3
20.0	56.37 .11	32.5 1.4	9.11 .12	35.0 0.2	19.76 −.10	24.9 3.3	14.15 .17	38.2 2.4
30.0	56.50 .15	31.1 1.3	9.24 .15	35.2 −0.1	19.75 +.09	21.6 3.3	14.35 .23	35.7 2.4
Feb. 9.0	56.67 .18	29.8 1.2	9.41 .18	35.3 0.0	19.94 .28	18.2 3.2	14.61 .29	33.3 2.4
18.9	56.86 +.21	28.7 −0.9	9.60 +.21	35.2 +0.1	20.30 +.45	15.1 −3.0	14.93 +.34	30.9 +2.3
28.9	57.08 .23	27.9 0.6	9.82 .23	35.0 0.3	20.84 .61	12.3 2.6	15.29 .39	28.6 2.2
Mar. 10.9	57.32 .25	27.4 −0.3	10.07 .26	34.6 0.5	21.53 .75	9.9 2.1	15.71 .43	26.4 2.1
20.8	57.58 .27	27.3 0.0	10.33 .28	34.1 0.7	22.35 .86	8.0 1.6	16.15 .46	24.4 1.9
30.8	57.86 .29	27.5 +0.4	10.62 .29	33.3 0.8	23.26 .94	6.7 1.0	16.64 .49	22.7 1.6
Apr. 9.8	58.15 +.30	28.0 +0.7	10.92 +.31	32.4 +1.0	24.23 +.99	6.0 −0.4	17.14 +.51	21.2 +1.4
19.8	58.45 .30	28.9 1.1	11.23 .32	31.3 1.1	25.24 1.00	6.0 +0.3	17.66 .52	19.9 1.1
29.7	58.76 .31	30.2 1.4	11.55 .32	30.1 1.2	26.24 .98	6.6 0.9	18.20 .53	19.0 0.8
May 9.7	59.06 .30	31.7 1.6	11.87 .32	28.8 1.3	27.20 .93	7.8 1.5	18.73 .53	18.4 0.4
19.7	59.36 .29	33.4 1.8	12.19 .31	27.4 1.3	28.10 .85	9.5 2.0	19.26 .52	18.1 +0.1
29.7	59.65 +.27	35.3 +1.9	12.50 +.30	26.1 +1.3	28.91 +.75	11.8 +2.5	19.77 +.49	18.2 −0.3
June 8.6	59.91 .25	37.2 2.0	12.79 .28	24.8 1.3	29.59 .63	14.5 2.9	20.24 .45	18.6 0.6
18.6	60.15 .22	39.3 2.0	13.05 .25	23.6 1.2	30.14 .48	17.6 3.2	20.67 .41	19.4 0.9
28.6	60.36 .19	41.3 2.0	13.28 .22	22.5 1.0	30.55 .32	20.9 3.4	21.06 .35	20.4 1.2
July 8.5	60.52 .15	43.3 1.9	13.48 .18	21.5 0.9	30.78 +.15	24.4 3.5	21.38 .29	21.8 1.5
18.5	60.65 +.11	45.2 +1.8	13.64 +.13	20.7 +0.7	30.85 −.01	28.0 +3.6	21.63 +.21	23.4 −1.7
28.5	60.74 .06	46.9 1.6	13.75 .09	20.0 0.6	30.75 .18	31.6 3.6	21.81 .14	25.3 1.9
Aug. 7.5	60.78 +.02	48.4 1.4	13.82 +.04	19.5 0.4	30.49 .35	35.1 3.5	21.90 +.06	27.2 2.0
17.4	60.77 −.02	49.8 1.2	13.84 .00	19.2 0.2	30.06 .50	38.5 3.3	21.92 −.02	29.2 2.0
27.4	60.73 .06	50.9 1.0	13.81 −.04	19.1 +0.1	29.49 .64	41.7 3.0	21.87 .09	31.2 1.9
Sept. 6.4	60.65 −.10	51.9 +0.8	13.75 −.08	19.1 0.0	28.78 −.77	44.5 +2.7	21.74 −.16	33.0 −1.8
16.4	60.53 .13	52.5 0.6	13.65 .11	19.2 −0.1	27.96 .87	47.1 2.3	21.54 .22	34.7 1.6
26.3	60.40 .15	53.0 0.3	13.53 .13	19.3 0.2	27.04 .96	49.2 1.9	21.30 .26	36.2 1.3
Oct. 6.3	60.24 .16	53.2 +0.1	13.38 .15	19.6 0.3	26.03 1.03	50.9 1.4	21.02 .29	37.3 0.9
16.3	60.08 .16	53.2 −0.1	13.23 .15	19.9 0.3	24.98 1.07	52.1 0.9	20.71 .30	38.0 0.5
26.2	59.93 −.15	53.0 −0.4	13.08 −.15	20.2 −0.3	23.90 −1.08	52.7 +0.4	20.41 −.30	38.4 −0.1
Nov. 5.2	59.78 .13	52.5 0.6	12.94 .13	20.5 0.3	22.83 1.06	52.9 −0.1	20.11 .28	38.3 +0.3
15.2	59.66 .11	51.7 0.8	12.82 .11	20.9 0.4	21.78 1.02	52.4 0.6	19.84 .25	37.7 0.7
25.2	59.56 .08	50.9 1.0	12.72 .08	21.2 0.4	20.80 .94	51.4 1.3	19.61 .21	36.8 1.1
Dec. 5.1	59.49 .05	49.8 1.2	12.65 .05	21.6 0.4	19.90 .84	49.8 1.8	19.44 .15	35.5 1.5
15.1	59.45 −.02	48.6 −1.3	12.62 −.01	22.0 −0.3	19.11 −.71	47.7 −2.3	19.33 −.08	33.8 +1.8
25.1	59.45 +.02	47.2 1.4	12.62 +.02	22.3 0.3	18.47 .57	45.2 2.7	19.28 −.01	31.9 2.1
35.1	59.49 +.06	45.8 −1.5	12.67 +.06	22.6 −0.3	17.98 −.40	42.2 −3.1	19.30 +.06	29.7 +2.3

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Cygni.		π Capricorni.		ε Delphini.		Groombridge 3241.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	20 18	+39 54	20 21	−18 33	20 28	+10 56	20 30	+72 9
	s	″	s	″	s	″	s	″
Jan. 0.1	23.51 −.04	59.3 −2.7	13.82 +.04	44.4 0.0	7.44 +.01	28.4 −1.6	22.82 −.34	82.4 −2.9
10.0	23.50 +.01	56.5 2.8	13.88 .08	44.3 +0.1	7.47 .05	26.8 1.6	22.54 .22	79.3 3.1
20.0	23.54 .06	53.7 2.9	13.97 .11	44.2 0.2	7.54 .08	25.2 1.6	22.38 −.09	76.1 3.3
30.0	23.63 .11	50.8 2.8	14.10 .15	44.0 0.3	7.64 .12	23.6 1.5	22.35 +.04	72.7 3.3
Feb. 9.0	23.76 .15	48.0 2.6	14.26 .18	43.7 0.4	7.77 .15	22.2 1.3	22.46 .17	69.4 3.2
18.9	23.93 +.19	45.5 −2.4	14.46 +.21	43.3 +0.5	7.93 +.18	21.0 −1.1	22.70 +.30	66.2 −3.0
28.9	24.15 .23	43.3 2.0	14.68 .23	42.7 0.6	8.13 .21	20.0 0.8	23.06 .42	63.3 2.7
Mar. 10.9	24.40 .27	41.6 1.5	14.92 .26	42.0 0.8	8.35 .23	19.3 0.5	23.53 .52	60.8 2.3
20.9	24.69 .30	40.3 1.0	15.19 .28	41.2 0.9	8.59 .25	19.0 −0.1	24.10 .61	58.8 1.7
30.8	25.00 .33	39.6 −0.4	15.48 .30	40.2 1.0	8.85 .27	19.1 +0.3	24.74 .67	57.3 1.1
Apr. 9.8	25.34 +.34	39.4 +0.1	15.79 +.31	39.2 +1.1	9.14 +.29	19.6 +0.6	25.44 +.72	56.5 −0.5
19.8	25.69 .35	39.8 0.7	16.11 .32	38.0 1.2	9.44 .30	20.4 1.0	26.18 .74	56.3 +0.1
29.7	26.04 .36	40.8 1.3	16.43 .33	36.8 1.3	9.75 .31	21.6 1.3	26.92 .74	56.7 0.8
May 9.7	26.40 .35	42.3 1.8	16.76 .33	35.5 1.3	10.06 .31	23.1 1.6	27.66 .71	57.8 1.4
19.7	26.74 .33	44.3 2.2	17.09 .32	34.2 1.2	10.36 .30	24.9 1.9	28.35 .67	59.4 1.9
29.7	27.07 +.31	46.7 +2.6	17.41 +.31	33.0 +1.2	10.66 +.29	26.9 +2.1	28.99 +.60	61.6 +2.4
June 8.6	27.36 .28	49.4 2.9	17.72 .29	31.8 1.1	10.94 .27	29.0 2.2	29.56 .52	64.2 2.8
18.6	27.63 .24	52.4 3.1	17.99 .26	30.8 0.9	11.20 .24	31.3 2.2	30.03 .42	67.2 3.1
28.6	27.85 .20	55.6 3.2	18.24 .23	30.0 0.8	11.43 .21	33.5 2.2	30.41 .31	70.5 3.4
July 8.6	28.03 .15	58.8 3.2	18.45 .19	29.3 0.6	11.62 .17	35.7 2.2	30.67 .20	74.0 3.6
18.5	28.15 +.10	62.0 +3.2	18.63 +.15	28.8 +0.4	11.77 +.13	37.9 +2.1	30.81 +.08	77.6 +3.6
28.5	28.23 +.05	65.2 3.1	18.75 .10	28.4 0.2	11.88 .09	39.9 1.9	30.83 −.04	81.3 3.6
Aug. 7.5	28.25 −.01	68.3 2.9	18.83 .05	28.3 +0.1	11.94 +.04	41.7 1.7	30.73 .16	84.9 3.5
17.4	28.21 .06	71.1 2.7	18.86 +.01	28.3 −0.1	11.96 .00	43.4 1.5	30.52 .27	88.4 3.4
27.4	28.13 .11	73.7 2.4	18.85 −.04	28.4 0.2	11.94 −.04	44.8 1.3	30.19 .38	91.7 3.2
Sept. 6.4	28.00 −.15	76.0 +2.1	18.79 −.08	28.7 −0.3	11.88 −.08	46.0 +1.1	29.76 −.48	94.8 +2.9
16.4	27.83 .18	78.0 1.7	18.69 .11	29.0 0.4	11.78 .11	46.9 0.8	29.23 .56	97.5 2.5
26.3	27.63 .21	79.5 1.3	18.57 .13	29.4 0.4	11.66 .13	47.6 0.6	28.64 .63	99.8 2.1
Oct. 6.3	27.41 .23	80.7 0.9	18.43 .15	29.8 0.4	11.51 .15	48.1 +0.3	27.97 .68	101.7 1.6
16.3	27.18 .24	81.3 +0.5	18.28 .15	30.2 0.4	11.36 .15	48.2 0.0	27.27 .72	103.1 1.1
26.2	26.94 −.24	81.6 0.0	18.12 −.15	30.6 −0.4	11.20 −.15	48.1 −0.2	26.54 −.73	104.0 +0.6
Nov. 5.2	26.71 .23	81.3 −0.5	17.98 .14	30.9 0.3	11.05 .14	47.8 0.5	25.81 .72	104.3 0.0
15.2	26.49 .21	80.6 1.0	17.85 .12	31.2 0.2	10.92 .12	47.2 0.7	25.09 .70	104.1 −0.5
25.2	26.30 .18	79.4 1.4	17.74 .09	31.4 0.2	10.80 .10	46.3 0.9	24.41 .65	103.2 1.1
Dec. 5.1	26.14 .14	77.7 1.9	17.67 .06	31.6 0.1	10.71 .07	45.2 1.2	23.78 .59	101.8 1.7
15.1	26.01 −.10	75.7 −2.2	17.63 −.02	31.7 −0.1	10.65 −.04	44.0 −1.4	23.23 −.51	99.9 −2.2
25.1	25.93 .06	73.3 2.5	17.63 +.02	31.7 0.0	10.63 −.01	42.6 1.5	22.77 .41	97.4 2.6
35.1	25.89 −.01	70.7 −2.7	17.66 +.06	31.7 0.0	10.64 +.02	41.0 −1.6	22.42 −.29	94.6 −3.0

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Cygni.		μ Aquarii.		12 Year Cat. 1879.		ν Cygni.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 20 37	° ′ +44 53	h m 20 46	° ′ − 9 22	h m 20 52	° ′ +80 8	h m 20 53	° ′ +40 45
	s	″	s	″	s	″	s	″
Jan. 0.1	46.94 −.07	64.2 −2.6	54.85 +.01	61.9 −0.5	14.81 −.82	80.3 −2.5	11.28 −.07	31.9 −2.4
10.1	46.89 −.02	61.5 2.8	54.88 .05	62.4 0.4	14.10 .60	77.5 2.9	11.23 −.03	29.4 2.7
20.0	46.90 +.03	58.5 2.9	54.95 .08	62.8 0.3	13.61 .37	74.4 3.2	11.22 +.02	26.6 2.8
30.0	46.95 .09	55.6 2.9	55.04 .11	63.1 0.2	13.36 −.13	71.2 3.3	11.26 .06	23.8 2.8
Feb. 9.0	47.05 .13	52.7 2.8	55.17 .14	63.2 −0.1	13.35 +.11	67.9 3.3	11.35 .11	21.1 2.7
19.0	47.21 +.18	50.0 −2.6	55.33 +.17	63.3 +0.1	13.59 +.35	64.7 −3.1	11.48 +.15	18.5 −2.4
28.9	47.41 .22	47.6 2.2	55.52 .20	63.1 0.3	14.05 .58	61.6 2.9	11.66 .20	16.2 2.1
Mar. 10.9	47.65 .26	45.6 1.8	55.73 .23	62.7 0.5	14.74 .78	58.9 2.5	11.88 .24	14.3 1.7
20.9	47.94 .30	44.0 1.3	55.97 .25	62.2 0.7	15.62 .96	56.6 2.0	12.14 .28	12.8 1.2
30.8	48.26 .33	43.0 0.7	56.23 .27	61.4 0.9	16.65 1.09	54.9 1.5	12.43 .31	11.8 0.7
Apr. 9.8	48.61 +.36	42.6 −0.1	56.51 +.29	60.4 +1.1	17.80+1.19	53.7 −0.9	12.75 +.33	11.3 −0.1
19.8	48.97 .37	42.8 +0.5	56.81 .31	59.2 1.3	19.03 1.25	53.1 −0.3	13.10 .35	11.5 +0.4
29.8	49.35 .38	43.6 1.0	57.12 .32	57.9 1.4	20.30 1.26	53.1 +0.3	13.46 .36	12.2 1.0
May 9.7	49.73 .38	44.9 1.5	57.44 .32	56.4 1.5	21.55 1.23	53.8 1.0	13.82 .36	13.4 1.5
19.7	50.10 .36	46.7 2.0	57.76 .32	54.8 1.6	22.76 1.16	55.0 1.5	14.18 .35	15.1 2.0
29.7	50.45 +.34	49.0 +2.5	58.08 +.31	53.3 +1.6	23.88+1.06	56.8 +2.0	14.53 +.34	17.3 +2.4
June 8.6	50.78 .31	51.7 2.8	58.38 .29	51.7 1.5	24.88 .92	59.1 2.5	14.86 .31	19.9 2.7
18.6	51.08 .27	54.6 3.1	58.66 .27	50.2 1.5	25.72 .76	61.9 2.9	15.16 .28	22.7 3.0
28.6	51.33 .23	57.8 3.3	58.92 .24	48.7 1.4	26.40 .58	65.0 3.2	15.42 .24	25.8 3.2
July 8.6	51.53 .18	61.1 3.4	59.14 .20	47.4 1.2	26.89 .39	68.3 3.4	15.64 .19	29.0 3.3
18.5	51.68 +.12	64.5 +3.4	59.32 +.16	46.3 +1.0	27.17 +.18	71.8 +3.6	15.81 +.14	32.3 +3.3
28.5	51.77 .06	67.9 3.3	59.47 .12	45.3 0.8	27.25 −.03	75.5 3.7	15.92 .09	35.6 3.2
Aug. 7.5	51.81 +.01	71.2 3.2	59.56 .07	44.6 0.7	27.12 .23	79.1 3.6	15.98 +.04	38.8 3.1
17.5	51.79 −.05	74.3 3.0	59.61 +.03	44.0 0.5	26.78 .43	82.7 3.5	15.99 −.02	41.8 2.9
27.4	51.71 .10	77.1 2.7	59.62 −.01	43.6 0.3	26.25 .63	86.2 3.4	15.95 .07	44.6 2.7
Sept. 6.4	51.59 −.15	79.7 +2.4	59.58 −.05	43.4 +0.1	25.52 −.80	89.5 +3.2	15.86 −.11	47.2 +2.4
16.4	51.42 .19	82.0 2.1	59.51 .09	43.4 0.0	24.64 .96	92.5 2.9	15.72 .15	49.5 2.1
26.3	51.21 .22	83.9 1.7	59.41 .11	43.4 −0.1	23.60 1.10	95.2 2.5	15.55 .18	51.4 1.7
Oct. 6.3	50.98 .24	85.3 1.3	59.28 .13	43.6 0.2	22.45 1.21	97.5 2.0	15.35 .21	52.9 1.3
16.3	50.73 .25	86.3 0.8	59.14 .14	43.9 0.3	21.19 1.29	99.3 1.6	15.13 .22	53.9 0.9
26.3	50.47 −.26	86.9 +0.3	59.00 −.14	44.2 −0.4	19.87−1.34	100.6 +1.1	14.91 −.23	54.6 +0.4
Nov. 5.2	50.21 .25	86.9 −0.2	58.86 .13	44.7 0.4	18.51 1.36	101.4 +0.5	14.68 .22	54.7 −0.1
15.2	49.96 .23	86.4 0.7	58.73 .12	45.1 0.5	17.15 1.34	101.6 −0.1	14.45 .21	54.3 0.6
25.2	49.74 .21	85.4 1.2	58.62 .10	45.6 0.5	15.83 1.29	101.3 0.7	14.25 .19	53.5 1.0
Dec. 5.2	49.54 .18	84.0 1.7	58.54 .07	46.1 0.5	14.57 1.20	100.3 1.2	14.07 .17	52.3 1.5
15.1	49.38 −.14	82.1 −2.1	58.48 −.04	46.5 −0.5	13.43−1.07	98.8 −1.8	13.92 −.13	50.5 −1.9
25.1	49.26 .10	79.8 2.4	58.46 −.01	47.0 0.5	12.43 .91	96.8 2.3	13.80 .09	48.5 2.2
35.1	49.18 −.05	77.2 −2.7	58.47 +.01	47.5 −0.5	11.60 −.72	94.3 −2.7	13.73 −.05	46.1 −2.5

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	61^{1} Cygni.		ζ Cygni.		α Cephei.		1 Pegasi.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	21h 2m	+38° 13′	21h 8m	+29° 47′	21h 15m	+62° 7′	21h 17m	+19° 20′
	s	″	s	″	s	″	s	″
Jan. 0.1	6.80 −.06	40.6 −2.2	23.76 −.05	29.7 −2.1	59.85 −.24	75.3 −2.5	9.55 −.04	60.0 −1.7
10.1	6.76 −.02	38.2 2.4	23.73 −.02	27.6 2.2	59.64 .18	72.6 2.8	9.53 −.01	58.3 1.8
20.0	6,76 +.02	35.7 2.5	23.74 +.02	25.3 2.3	59.50 .10	69.7 3.0	9.54 +.03	56.4 1.8
30.0	6.80 .07	33.1 2.6	23.78 .06	22.9 2.3	59.44 −.02	66.6 3.2	9.58 .06	54.6 1.8
Feb. 9.0	6.89 .11	30.6 2.5	23.85 .10	20.6 2.2	59.46 +.06	63.3 3.1	9.66 .09	52.8 1.7
19.0	7.02 +.15	28.2 −2.3	23.97 +.14	18.5 −2.0	59.56 +.14	60.2 −3.0	9.77 +.13	51.2 −1.5
28.9	7.20 .19	26.1 2.0	24.12 .17	16.6 1.7	59.74 .22	57.3 2.8	9.91 .16	49.8 1.2
Mar. 10.9	7.41 .23	24.3 1.6	24.31 .21	15.1 1.3	60.00 .30	54.6 2.4	10.09 .19	48.8 0.9
20.9	7.67 .27	22.9 1.1	24.54 .24	13.9 0.9	60.33 .37	52.4 2.0	10.30 .22	48.0 0.5
30.9	7.96 .30	22.0 0.6	24.80 .27	13.2 −0.5	60.73 .42	50.7 1.5	10.54 .25	47.7 −0.1
Apr. 9.8	8.27 +.33	21.7 −0.1	25.09 +.30	13.0 0.0	61.18 +.47	49.5 −0.9	10.81 +.28	47.8 +0.3
19.8	8.62 .35	21.9 +0.5	25.39 .32	13.3 +0.5	61.67 .50	48.9 −0.2	11.10 .30	48.4 0.7
29.8	8.97 .36	22.7 1.0	25.72 .33	14.1 1.0	62.18 .52	49.0 +0.4	11.40 .31	49.3 1.2
May 9.7	9.34 .37	24.0 1.5	26.05 .33	15.3 1.5	62.71 .53	49.7 1.0	11.72 .32	50.7 1.5
19.7	9.71 .36	25.7 2.0	26.39 .33	17.0 1.9	63.24 .51	51.0 1.6	12.04 .32	52.4 1.9
29.7	10.06 +.35	27.9 +2.4	26.72 +.32	19.1 +2.2	63.74 +.49	52.8 +2.1	12.36 +.31	54.4 +2.1
June 8.7	10.40 .32	30.5 2.7	27.03 .30	21.5 2.5	64.21 .45	55.2 2.5	12.67 .30	56.7 2.3
18.6	10.71 .29	33.4 3.0	27.32 .28	24.1 2.7	64.64 .40	57.9 2.9	12.96 .28	59.1 2.5
28.6	10.99 .25	36.5 3.2	27.59 .25	27.0 2.9	65.01 .34	61.0 3.2	13.22 .25	61.6 2.6
July 8.6	11.22 .21	39.7 3.3	27.81 .21	29.9 2.9	65.32 .27	64.4 3.5	13.46 .21	64.2 2.6
18.6	11.41 +.16	43.0 +3.3	28.00 +.16	32.8 +2.9	65.55 +.19	67.9 +3.6	13.65 +.17	66.8 +2.5
28.5	11.55 .11	46.3 3.2	28.14 .11	35.8 2.9	65.71 .11	71.6 3.7	13.80 .13	69.3 2.4
Aug. 7.5	11.64 .06	49.5 3.1	28.23 .07	38.6 2.8	65.78 +.03	75.3 3.7	13.91 .08	71.7 2.3
17.5	11.67 +.01	52.6 3.0	28.27 +.02	41.3 2.6	65.77 −.05	78.9 3.6	13.97 +.04	73.9 2.1
27.4	11.65 −.04	55.5 2.8	28.27 −.03	43.7 2.3	65.69 .12	82.4 3.4	13.99 .00	76.0 1.9
Sept. 6.4	11.59 −.09	58.1 +2.5	28.22 −.07	46.0 +2.1	65.53 −.20	85.7 +3.1	13.96 −.04	77.7 +1.6
16.4	11.48 .13	60.4 2.1	28.13 .11	47.9 1.8	65.30 .26	88.7 2.8	13.90 .08	79.3 1.4
26.4	11.34 .16	62.4 1.8	28.00 .14	49.5 1.5	65.01 .31	91.4 2.5	13.80 .11	80.5 1.1
Oct. 6.3	11.16 .18	64.0 1.4	27.85 .16	50.8 1.1	64.67 .36	93.7 2.1	13.68 .13	81.4 0.8
16.3	10.97 .20	65.2 1.0	27.68 .17	51.7 0.7	64.29 .39	95.5 1.6	13.54 .15	82.1 0.5
26.3	10.77 −.20	65.9 +0.5	27.50 −.18	52.2 +0.3	63.88 −.41	96.9 +1.1	13.38 −.15	82.4 +0.1
Nov. 5.3	10.56 .20	66.2 0.0	27.32 .18	52.3 −0.1	63.46 .42	97.7 +0.5	13.23 .15	82.4 −0.2
15.2	10.37 .19	66.0 −0.4	27.15 .17	52.0 0.5	63.04 .42	98.0 0.0	13.08 .14	82.0 0.5
25.2	10.18 .17	65.4 0.9	26.99 .15	51.3 0.9	62.63 .40	97.7 −0.6	12.94 .13	81.4 0.8
Dec. 5.2	10.02 .15	64.3 1.3	26.84 .13	50.2 1.3	62.24 .37	96.8 1.2	12.82 .11	80.5 1.1
15.1	9.88 −.12	62.8 −1.7	26.73 −.10	48.8 −1.6	61.89 −.33	95.4 −1.7	12.73 −.08	79.2 −1.3
25.1	9.78 .08	60.9 2.0	26.64 .07	47.0 1.9	61.58 .28	93.4 2.2	12.66 .06	77.8 1.5
35.1	9.72 −.05	58.7 −2.3	26.58 −.04	45.0 −2.1	61.34 −.22	91.0 −2.6	12.61 −.03	76.2 −1.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Aquarii.		β Cephei.		ξ Aquarii.		ε Pegasi.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*
	h m	° ′	h m	° ′	h m	° ′	h m	° ′
	21 25	− 6 2	21 27	+70 5	21 32	− 8 19	21 38	+ 9 23
	s	″	s	″	s	″	s	″
Jan. 0.1	57.53 −.02	24.0 −0.6	13.26 −.40	49.2 −2.3	5.40 −.02	55.9 −0.5	57.54 −.04	15.5 −1.2
10.1	57.52 +.01	24.6 0.5	12.90 .31	46.6 2.7	5.39 +.01	56.3 0.4	57.51 −.01	14.3 1.3
20.1	57.55 .04	25.1 0.4	12.63 .21	43.7 3.0	5.41 .03	56.7 0.3	57.51 +.02	13.0 1.3
30.0	57.60 .07	25.5 0.3	12.47 −.10	40.6 3.2	5.46 .06	57.0 −0.2	57.54 .05	11.8 1.2
Feb. 9.0	57.69 .10	25.8 −0.2	12.42 +.01	37.4 3.2	5.54 .10	57.1 0.0	57.60 .08	10.6 1.1
19.0	57.80 +.13	25.9 0.0	12.49 +.13	34.2 −3.1	5.65 +.13	57.0 +0.1	57.70 +.11	9.6 −0.9
28.9	57.95 .16	25.8 +0.2	12.68 .24	31.1 3.0	5.79 .16	56.8 0.3	57.82 .14	8.8 0.7
Mar. 10.9	58.12 .19	25.5 0.4	12.98 .35	28.2 2.6	5.97 .19	56.4 0.5	57.98 .17	8.2 0.4
20.9	58.33 .22	25.0 0.6	13.38 .45	25.8 2.2	6.17 .21	55.7 0.8	58.17 .20	8.0 −0.1
30.9	58.56 .25	24.3 0.9	13.87 .53	23.8 1.7	6.39 .24	54.9 1.0	58.39 .23	8.0 +0.2
Apr. 9.8	58.82 +.27	23.3 +1.1	14.44 +.60	22.4 −1.1	6.65 +.27	53.8 +1.2	58.64 +.26	8.4 +0.6
19.8	59.10 .29	22.0 1.3	15.08 .65	21.5 −0.5	6.93 .29	52.5 1.4	58.91 .28	9.2 1.0
29.8	59.40 .31	20.6 1.5	15.74 .68	21.3 +0.1	7.23 .31	51.0 1.6	59.20 .30	10.4 1.3
May 9.8	59.71 .32	19.0 1.7	16.43 .69	21.7 0.7	7.54 .32	49.3 1.7	59.51 .31	11.8 1.6
19.7	60.03 .32	17.3 1.8	17.11 .67	22.7 1.3	7.86 .32	47.6 1.8	59.83 .32	13.5 1.8
29.7	60.35 +.32	15.5 +1.8	17.78 +.64	24.3 +1.9	8.19 +.32	45.8 +1.8	60.15 +.31	15.4 +2.0
June 8.7	60.66 .31	13.7 1.8	18.39 .59	26.4 2.4	8.50 .31	44.0 1.8	60.46 .30	17.5 2.1
18.6	60.96 .29	11.9 1.7	18.95 .52	29.0 2.8	8.81 .29	42.3 1.7	60.75 .29	19.7 2.2
28.6	61.24 .26	10.2 1.6	19.44 .44	32.0 3.1	9.09 .27	40.7 1.6	61.03 .26	22.0 2.2
July 8.6	61.49 .23	8.6 1.5	19.84 .35	35.2 3.4	9.35 .24	39.2 1.4	61.28 .23	24.2 2.2
18.6	61.70 +.19	7.2 +1.3	20.14 +.25	38.8 +3.6	9.57 +.20	37.8 +1.2	61.50 +.20	26.4 +2.1
28.5	61.87 .15	5.9 1.1	20.34 .15	42.4 3.7	9.75 .16	36.7 1.0	61.67 .16	28.5 2.0
Aug. 7.5	62.01 .11	4.9 0.9	20.43 +.04	46.2 3.7	9.89 .12	35.7 0.8	61.81 .11	30.4 1.8
17.5	62.09 .06	4.0 0.7	20.42 −.07	49.9 3.7	9.98 .07	35.0 0.6	61.90 .07	32.2 1.6
27.5	62.13 +.02	3.4 0.5	20.29 .17	53.6 3.6	10.03 +.03	34.5 0.4	61.94 +.02	33.7 1.4
Sept. 6.5	62.13 −.02	2.9 +0.3	20.07 −.27	57.1 +3.4	10.03 −.01	34.2 +0.2	61.94 −.02	35.0 +1.2
16.4	62.09 .06	2.7 +0.2	19.76 .36	60.3 3.1	10.00 .05	34.1 0.0	61.90 .05	36.1 1.0
26.4	62.02 .09	2.6 0.0	19.36 .43	63.3 2.8	9.93 .08	34.1 −0.1	61.84 .08	37.0 0.7
Oct. 6.3	61.92 .11	2.7 −0.1	18.89 .50	65.8 2.4	9.83 .11	34.3 0.2	61.75 .11	37.6 0.5
16.3	61.80 .12	2.9 0.3	18.37 .55	68.0 1.9	9.72 .12	34.6 0.3	61.63 .12	37.9 +0.2
26.3	61.67 −.13	3.2 −0.4	17.79 −.59	69.7 +1.4	9.59 −.13	35.0 −0.4	61.50 −.13	38.1 0.0
Nov. 5.3	61.53 .13	3.7 0.4	17.19 .61	70.8 0.9	9.46 .13	35.4 0.5	61.37 .13	37.9 −0.2
15.2	61.41 .12	4.1 0.5	16.58 .61	71.4 +0.3	9.33 .12	35.9 0.5	61.23 .13	37.6 0.4
25.2	61.29 .11	4.7 0.5	15.98 .59	71.4 −0.3	9.21 .11	36.4 0.5	61.11 .12	37.1 0.6
Dec. 5.2	61.19 .09	5.2 0.6	15.39 .56	70.7 0.9	9.11 .09	37.0 0.5	61.00 .10	36.3 0.8
15.2	61.11 −.06	5.8 −0.6	14.85 −.51	69.6 −1.5	9.03 −.07	37.5 −0.5	60.91 −.08	35.4 −1.0
25.1	61.06 .04	6.4 0.6	14.36 .45	67.8 2.0	8.98 .04	38.0 0.5	60.84 .06	34.3 1.1
35.1	61.04 −.01	7.0 −0.6	13.95 −.37	65.6 −2.5	8.95 −.01	38.4 −0.5	60.80 −.03	33.2 −1.2

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	11 Cephei.		μ Capricorni.		79 Draconis.		α Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 21 40	° ′ +70 49	h m 21 47	° ′ -14 2	h m 21 51	° ′ +73 11	h m 22 0	° ′ - 0 49
	s	″	s	″	s	″	s	″
Jan. 0.1	17.96 -.45	31.4 -2.1	29.94 -.03	73.3 -0.2	27.81 -.55	71.5 -2.0	19.28 -.05	72.3 -0.7
10.1	17.55 .36	29.1 2.6	29.92 -.01	73.5 -0.1	27.31 .45	69.3 2.4	19.25 -.02	73.1 0.7
20.1	17.24 .26	26.3 2.9	29.93 +.02	73.5 0.0	26.91 .34	66.7 2.8	19.24 +.01	73.8 0.7
30.0	17.04 .14	23.3 3.1	29.97 .05	73.4 +0.2	26.63 .21	63.7 3.1	19.26 .03	74.4 0.6
Feb. 9.0	16.95 -.03	20.1 3.2	30.04 .08	73.1 0.3	26.48 -.08	60.5 3.2	19.30 .06	74.9 0.4
19.0	16.98 +.09	16.8 -3.2	30.13 +.11	72.7 +0.5	26.47 +.06	57.3 -3.2	19.38 +.09	75.3 -0.3
Mar. 1.0	17.14 .21	13.7 3.0	30.26 .14	72.1 0.7	26.60 .20	54.2 3.1	19.49 .12	75.5 -0.1
10.9	17.41 .33	10.8 2.7	30.42 .18	71.3 1.0	26.87 .33	51.2 2.8	19.63 .16	75.4 +0.2
20.9	17.80 .44	8.3 2.3	30.62 .21	70.3 1.1	27.26 .45	48.6 2.4	19.80 .19	75.1 0.4
30.9	18.28 .53	6.2 1.8	30.84 .24	69.1 1.3	27.77 .56	46.3 2.0	20.00 .22	74.5 0.7
Apr. 9.9	18.85 +.61	4.6 -1.3	31.09 +.26	67.8 +1.4	28.39 +.65	44.6 -1.5	20.24 +.25	73.7 +1.0
19.8	19.50 .66	3.6 0.7	31.37 .29	66.2 1.6	29.08 .72	43.4 0.9	20.50 .27	72.5 1.2
29.8	20.17 .69	3.2 -0.1	31.66 .31	64.6 1.7	29.84 .77	42.8 -0.3	20.78 .29	71.2 1.5
May 9.8	20.88 .71	3.4 +0.5	31.98 .32	62.9 1.8	30.63 .79	42.8 +0.3	21.08 .31	69.6 1.7
19.7	21.59 .70	4.3 1.1	32.30 .33	61.1 1.8	31.42 .79	43.5 1.0	21.40 .32	67.8 1.8
29.7	22.29 +.67	5.7 +1.7	32.64 +.33	59.3 +1.8	32.21 +.76	44.8 +1.5	21.72 +.32	65.9 +1.9
June 8.7	22.94 .63	7.7 2.2	32.96 .32	57.6 1.7	32.95 .72	46.6 2.1	22.04 .31	63.9 2.0
18.7	23.54 .56	10.1 2.6	33.28 .31	55.9 1.6	33.64 .65	48.9 2.5	22.35 .30	61.9 2.0
28.6	24.07 .48	13.0 3.0	33.58 .29	54.5 1.4	34.25 .56	51.6 2.9	22.64 .28	60.0 1.9
July 8.6	24.51 .39	16.2 3.3	33.85 .26	53.1 1.2	34.77 .46	54.7 3.2	22.91 .25	58.1 1.8
18.6	24.86 +.29	19.7 +3.5	34.09 +.22	52.0 +1.0	35.18 +.35	58.1 +3.5	23.14 +.22	56.3 +1.7
28.6	25.10 .19	23.3 3.7	34.29 .18	51.1 0.8	35.47 .24	61.7 3.7	23.34 .18	54.7 1.5
Aug. 7.5	25.23 +.08	27.1 3.8	34.45 .13	50.5 0.5	35.65 +.12	65.4 3.8	23.50 .14	53.3 1.3
17.5	25.26 -.03	30.8 3.7	34.56 .09	50.1 0.3	35.70 -.01	69.2 3.8	23.62 .09	52.0 1.1
27.5	25.17 .14	34.5 3.6	34.62 +.04	49.9 +0.1	35.64 .13	73.0 3.7	23.69 .05	51.1 0.9
Sept. 6.4	24.98 -.24	38.1 +3.5	34.65 .00	50.0 -0.1	35.45 -.24	76.7 +3.6	23.72 +.01	50.3 +0.7
16.4	24.69 .33	41.5 3.2	34.62 -.04	50.1 0.3	35.15 .35	80.1 3.3	23.71 -.03	49.7 0.5
26.4	24.31 .42	44.6 2.9	34.57 .07	50.4 0.4	34.75 .45	83.4 3.0	23.66 .07	49.4 0.3
Oct. 6.4	23.86 .49	47.3 2.5	34.48 .10	50.8 0.5	34.25 .53	86.3 2.7	23.59 .09	49.2 +0.1
16.3	23.34 .55	49.6 2.1	34.37 .12	51.4 0.5	33.68 .60	88.8 2.3	23.49 .11	49.2 -0.1
26.3	22.77 -.59	51.5 +1.6	34.25 -.13	51.9 -0.6	33.04 -.66	90.8 +1.8	23.37 -.12	49.4 -0.2
Nov. 5.3	22.16 .62	52.8 1.1	34.12 .13	52.5 0.6	32.36 .70	92.3 1.3	23.25 .12	49.7 0.4
15.3	21.54 .63	53.6 +0.5	33.99 .12	53.0 0.5	31.65 .71	93.4 0.7	23.13 .12	50.1 0.5
25.2	20.90 .62	53.8 -0.1	33.87 .11	53.6 0.5	30.93 .71	93.8 +0.1	23.01 .11	50.6 0.6
Dec. 5.2	20.30 .59	53.4 0.7	33.76 .10	54.0 0.4	30.22 .69	93.6 -0.5	22.90 .10	51.3 0.6
15.2	19.73 -.55	52.4 -1.3	33.68 -.08	54.4 -0.3	29.54 -.65	92.8 -1.1	22.81 -.08	51.9 -0.7
25.1	19.21 .49	50.9 1.8	33.61 .05	54.7 0.2	28.92 .59	91.4 1.6	22.74 .06	52.7 0.7
35.1	18.75 -.41	48.8 -2.3	33.58 -.03	54.9 -0.2	28.37 -.51	89.5 -2.2	22.69 -.04	53.4 -0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Gruis.		θ Aquarii.		π Aquarii.		η Aquarii.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	$22^{h}\ 1^{m}$	$-47^{\circ}\ 28'$	$22^{h}\ 11^{m}$	$-\ 8^{\circ}\ 18'$	$22^{h}\ 19^{m}$	$+\ 0^{\circ}\ 50'$	$22^{h}\ 29^{m}$	$-\ 0^{\circ}\ 39'$
	s	″	s	″	s	″	s	″
Jan. 0.1	32.07 −.09	44.8 +1.3	13.43 −.05	48.7 −0.5	50.81 −.05	16.3 −0.8	53.61 −.06	55.9 −0.7
10.1	32.00 .05	43.3 1.6	13.39 −.03	49.2 0.4	50.77 .03	15.5 0.8	53.56 .04	56.6 0.6
20.1	31.96 −.01	41.6 1.9	13.38 .00	49.5 0.3	50.74 −.01	14.7 0.7	53.52 −.02	57.3 0.5
30.1	31.98 +.04	39.5 2.1	13.39 +.03	49.7 −0.1	50.74 +.01	14.0 0.6	53.52 .00	57.9 0.4
Feb. 9.0	32.03 .08	37.3 2.3	13.43 .06	49.7 0.0	50.77 .04	13.5 0.5	53.53 +.03	58.4 0.3
19.0	32.14 +.13	34.9 +2.5	13.50 +.09	49.6 +0.2	50.83 +.07	13.0 −0.3	53.58 +.06	58.7 −0.2
Mar. 1.0	32.29 .17	32.4 2.6	13.60 .12	49.3 0.4	50.91 .10	12.8 −0.1	53.66 .09	58.8 0.0
11.0	32.48 .22	29.7 2.6	13.73 .15	48.8 0.6	51.03 .14	12.8 +0.1	53.77 .13	58.8 +0.2
20.9	32.72 .26	27.1 2.6	13.90 .18	48.0 0.9	51.19 .17	13.0 0.4	53.91 .16	58.4 0.5
30.9	33.00 .30	24.5 2.6	14.09 .21	47.1 1.1	51.37 .20	13.5 0.7	54.09 .19	57.8 0.7
Apr. 9.9	33.32 +.34	22.0 +2.5	14.32 +.24	45.9 +1.3	51.59 +.23	14.3 +0.9	54.30 +.22	57.0 +1.0
19.8	33.68 .37	19.6 2.3	14.58 .27	44.5 1.5	51.84 .26	15.4 1.2	54.54 .25	55.8 1.2
29.8	34.07 .40	17.4 2.1	14.86 .29	42.9 1.7	52.11 .28	16.7 1.5	54.81 .28	54.4 1.5
May 9.8	34.48 .42	15.3 1.9	15.16 .31	41.1 1.8	52.41 .30	18.3 1.7	55.10 .30	52.8 1.7
19.8	34.91 .43	13.6 1.6	15.48 .32	39.3 1.9	52.72 .32	20.1 1.8	55.41 .31	51.1 1.9
29.7	35.35 +.44	12.2 +1.3	15.80 +.32	37.4 +1.9	53.04 +.32	22.0 +1.9	55.73 +.32	49.1 +2.0
June 8.7	35.79 .43	11.1 0.9	16.13 .32	35.5 1.9	53.36 .32	24.0 2.0	56.05 .32	47.1 2.0
18.7	36.22 .42	10.4 0.5	16.45 .31	33.6 1.8	53.68 .31	26.0 2.1	56.37 .31	45.1 2.0
28.7	36.62 .39	10.1 +0.1	16.75 .29	31.8 1.7	53.98 .29	28.1 2.0	56.68 .29	43.0 2.0
July 8.6	37.00 .35	10.1 −0.3	17.03 .26	30.2 1.5	54.25 .26	30.1 1.9	56.96 .27	41.1 1.9
18.6	37.33 +.31	10.6 −0.6	17.28 +.23	28.7 +1.3	54.50 +.23	32.0 +1.7	57.22 +.24	39.2 +1.8
28.6	37.61 .25	11.4 1.0	17.49 .19	27.5 1.1	54.72 .19	33.7 1.5	57.44 .20	37.6 1.6
Aug. 7.5	37.83 .19	12.6 1.3	17.66 .15	26.4 0.9	54.89 .15	35.2 1.4	57.63 .16	36.1 1.4
17.5	37.99 .13	14.0 1.5	17.79 .11	25.6 0.7	55.03 .11	36.6 1.2	57.77 .12	34.8 1.2
27.5	38.09 .07	15.6 1.7	17.88 .06	25.1 0.5	55.12 .07	37.7 1.0	57.87 .08	33.7 0.9
Sept. 6.5	38.13 +.01	17.4 −1.8	17.92 +.02	24.7 +0.2	55.16 +.03	38.6 +0.8	57.93 +.04	32.9 +0.7
16.4	38.10 −.05	19.3 1.9	17.92 −.02	24.6 0.0	55.17 −.01	39.3 0.6	57.95 .00	32.3 0.5
26.4	38.02 .11	21.2 1.8	17.89 .05	24.6 −0.2	55.14 .04	39.8 0.4	57.93 −.03	31.9 0.3
Oct. 6.4	37.89 .15	22.9 1.7	17.82 .08	24.8 0.3	55.08 .07	40.0 +0.2	57.88 .06	31.7 +0.1
16.4	37.72 .18	24.5 1.5	17.73 .10	25.1 0.4	55.00 .09	40.1 0.0	57.80 .08	31.7 −0.1
26.3	37.52 −.20	25.9 −1.2	17.62 −.11	25.6 −0.5	54.90 −.11	40.0 −0.2	57.71 −.10	31.9 −0.2
Nov. 5.3	37.31 .21	26.9 0.9	17.51 .12	26.1 0.5	54.79 .12	39.7 0.3	57.60 .11	32.2 0.4
15.3	37.10 .21	27.6 0.5	17.39 .12	26.6 0.6	54.67 .12	39.3 0.4	57.48 .11	32.6 0.5
25.2	36.88 .20	27.9 −0.1	17.27 .11	27.2 0.6	54.55 .11	38.8 0.5	57.37 .11	33.1 0.6
Dec. 5.2	36.69 .18	27.8 +0.3	17.16 .10	27.8 0.5	54.44 .10	38.2 0.6	57.26 .10	33.7 0.6
15.2	36.52 −.15	27.3 +0.7	17.07 −.08	28.3 −0.5	54.35 −.09	37.5 −0.7	57.16 −.09	34.4 −0.7
25.2	36.38 .12	26.4 1.1	16.99 .06	28.8 0.5	54.27 .07	36.8 0.7	57.08 .07	35.1 0.7
35.1	36.28 −.08	25.2 +1.4	16.94 −.04	29.2 −0.4	54.21 −.05	36.1 −0.8	57.02 −.05	35.8 −0.7

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	226 Cephei (B.)		ζ Pegasi.		ι Cephei.		λ Aquarii.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *South.*
	h m 22 30	° ′ +75 40	h m 22 36	° ′ +10 16	h m 22 45	° ′ +65 38	h m 22 47	° ′ − 8 8
	s	″	s	″	s	″	s	″
Jan. 0.2	19.84 −.73	60.3 −1.5	9.50 −.08	38.3 −1.0	51.41 −.41	45.8 −1.4	4.29 −.08	44.9 −0.5
10.1	19.15 .64	58.5 2.0	9.43 .06	37.2 1.1	51.03 .36	44.2 1.9	4.23 .06	45.3 0.4
20.1	18.57 .52	56.3 2.4	9.39 .03	36.1 1.1	50.71 .30	42.0 2.4	4.19 .04	45.6 0.3
30.1	18.10 .39	53.7 2.8	9.37 −.01	35.0 1.1	50.45 .24	39.5 2.7	4.16 −.01	45.8 −0.2
Feb. 9.1	17.78 .25	50.7 3.0	9.37 +.02	34.0 1.0	50.27 .16	36.7 2.9	4.17 +.01	45.8 0.0
19.0	17.61 −.09	47.6 −3.1	9.41 +.05	33.0 −0.9	50.17 −.07	33.7 −3.0	4.20 +.04	45.6 +0.2
Mar. 1.0	17.60 +.07	44.5 3.1	9.48 .08	32.2 0.7	50.16 +.03	30.7 3.0	4.26 .07	45.3 0.4
11.0	17.76 .24	41.4 3.0	9.58 .12	31.6 0.4	50.25 .12	27.7 2.9	4.36 .10	44.7 0.6
20.9	18.08 .38	38.5 2.7	9.72 .15	31.3 −0.1	50.44 .22	25.0 2.7	4.49 .14	43.9 0.8
30.9	18.55 .54	36.0 2.3	9.89 .19	31.3 +0.2	50.72 .31	22.5 2.3	4.65 .17	42.9 1.1
Apr. 9.9	19.15 +.66	33.8 −1.9	10.10 +.22	31.7 +0.5	51.09 +.39	20.5 −1.9	4.85 +.21	41.6 +1.3
19.9	19.88 .77	32.2 1.4	10.33 .25	32.3 0.8	51.53 .46	18.9 1.4	5.08 .24	40.2 1.5
29.8	20.69 .85	31.1 0.8	10.60 .28	33.3 1.2	52.03 .51	18.0 0.8	5.34 .27	38.5 1.7
May 9.8	21.57 .90	30.6 −0.2	10.89 .30	34.6 1.5	52.59 .55	17.5 −0.2	5.63 .29	36.7 1.8
19.8	22.49 .92	30.7 +0.4	11.20 .32	36.2 1.7	53.18 .58	17.7 +0.4	5.94 .31	34.8 1.9
29.8	23.41 +.92	31.4 +1.0	11.52 +.32	38.1 +1.9	53.78 +.59	18.4 +0.9	6.26 +.32	32.8 +2.0
June 8.7	24.32 .88	32.7 1.6	11.85 .32	40.1 2.1	54.38 .58	19.7 1.5	6.58 .32	30.8 2.0
18.7	25.18 .83	34.5 2.1	12.17 .31	42.3 2.2	54.96 .55	21.6 2.0	6.91 .31	28.8 1.9
28.7	25.97 .75	36.9 2.5	12.47 .30	44.5 2.3	55.50 .51	23.9 2.5	7.22 .30	26.9 1.8
July 8.6	26.67 .65	39.6 2.9	12.76 .27	46.8 2.3	56.00 .45	26.6 2.8	7.52 .28	25.1 1.6
18.6	27.27 +.54	42.8 +3.3	13.02 +.24	49.1 +2.2	56.43 +.39	29.7 +3.1	7.79 +.25	23.5 +1.4
28.6	27.75 .41	46.2 3.5	13.24 .21	51.3 2.1	56.80 .32	33.0 3.3	8.03 .22	22.2 1.2
Aug. 7.6	28.10 .28	49.8 3.7	13.43 .17	53.3 2.0	57.09 .23	36.6 3.6	8.23 .18	21.0 1.0
17.5	28.31 .14	53.6 3.8	13.57 .12	55.2 1.8	57.29 .15	40.3 3.7	8.40 .14	20.1 0.7
27.5	28.38 +.01	57.4 3.8	13.68 .08	56.9 1.6	57.42 +.06	44.0 3.7	8.52 .09	19.5 0.5
Sept. 6.5	28.32 −.13	61.2 +3.7	13.74 +.04	58.4 +1.4	57.45 −.02	47.7 +3.6	8.60 +.05	19.1 +0.2
16.5	28.13 .26	64.9 3.6	13.76 .00	59.6 1.1	57.40 .10	51.3 3.5	8.63 +.01	18.9 0.0
26.4	27.80 .38	68.5 3.4	13.74 −.03	60.6 0.9	57.28 .17	54.8 3.3	8.63 −.02	18.9 −0.2
Oct. 6.4	27.36 .49	71.7 3.1	13.70 .06	61.4 0.6	57.08 .24	58.0 3.0	8.59 .05	19.1 0.3
16.4	26.82 .59	74.7 2.8	13.62 .09	61.9 0.4	56.81 .31	60.9 2.7	8.53 .08	19.5 0.5
26.3	26.17 −.68	77.3 +2.3	13.53 −.10	62.2 +0.2	56.49 −.36	63.4 +2.3	8.44 −.10	20.0 −0.6
Nov. 5.3	25.46 .75	79.4 1.8	13.42 .11	62.3 0.0	56.12 .40	65.4 1.8	8.34 .11	20.5 0.6
15.3	24.68 .79	81.0 1.3	13.30 .12	62.1 −0.2	55.72 .43	66.9 1.2	8.24 .11	21.1 0.7
25.3	23.87 .82	82.1 0.7	13.19 .12	61.8 0.4	55.29 .45	68.0 0.7	8.12 .11	21.7 0.7
Dec. 5.2	23.04 .82	82.5 +0.1	13.07 .11	61.2 0.6	54.85 .45	68.4 +0.1	8.01 .11	22.3 0.6
15.2	22.22 −.80	82.3 −0.5	12.96 −.10	60.5 −0.8	54.41 −.44	68.3 −0.5	7.91 −.10	22.9 −0.6
25.2	21.43 .76	81.6 1.1	12.87 .08	59.6 0.9	53.98 .42	67.5 1.0	7.82 .07	23.5 0.5
35.2	20.70 −.69	80.2 −1.7	12.80 −.07	58.6 −1.0	53.59 −.39	66.2 −1.6	7.75 −.07	23.9 −0.4

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	α Piscis Australis. (*Fomalhaut.*)		α Pegasi. (*Markab.*)		ο Cephei.		θ Piscium.	
	Right Ascension.	Declination *South.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 22 51	° ′ −30 10	h m 22 59	° ′ +14 37	h m 23 14	° ′ +67 31	h m 23 22	° ′ + 5 47
	s	″	s	″	s	″	s	″
Jan. 0.2	46.93 −.09	76.7 +0.3	27.88 −.09	65.2 −1.1	13.67 −.47	67.8 −1.0	34.71 −.10	45.5 −0.8
10.2	46.84 .07	76.2 0.6	27.79 .07	64.1 1.1	13.22 .43	66.5 1.6	34.62 .09	44.6 0.9
20.1	46.79 .04	75.5 0.9	27.73 .05	63.0 1.2	12.83 .38	64.7 2.0	34.55 .07	43.8 0.8
30.1	46.75 −.01	74.5 1.1	27.68 .03	61.7 1.2	12.50 .31	62.5 2.4	34.50 .05	43.0 0.8
Feb. 9.1	46.75 +.02	73.3 1.3	27.66 −.01	60.5 1.2	12 23 .23	59.9 2.7	34.47 −.03	42.3 0.7
19.0	46.78 +.05	71.8 +1.6	27.67 +.02	59.4 −1.1	12.06 −.14	57.1 −2.9	34.46 .00	41.6 −0.6
Mar. 1.0	46.85 .08	70.1 1.8	27.72 .06	58.4 0.9	11.98 −.04	54.1 3.0	34.48 +.03	41.2 0.4
11.0	46.95 .12	68.3 2.0	27.79 .09	57.6 0.7	12.00 +.06	51.1 3.0	34.54 .06	40.9 −0.2
20.9	47.08 .16	66.2 2.1	27.90 .13	57.0 0.4	12.14 .17	48.2 2.8	34.62 .10	40.9 0.0
30.9	47.26 .19	64.0 2.2	28.06 .17	56.7 −0.1	12.37 .27	45.6 2.5	34.75 .14	41.1 +0.3
Apr. 9.9	47.47 +.23	61.8 +2.3	28.24 +.21	56.8 +0.2	12.71 +.36	43.4 −2.1	34.92 +.18	41.6 +0.6
19.9	47.72 .27	59.4 2.3	28.47 .24	57.2 0.6	13.13 .44	41.5 1.7	35.12 .21	42.5 0.9
29.8	48.01 .30	57.1 2.3	28.73 .27	58.0 0.9	13.63 .52	40.2 1.1	35.35 .24	43.6 1.2
May 9.8	48.32 .32	54.8 2.2	29.01 .30	59.1 1.3	14.20 .57	39.4 −0.6	35.62 .27	45.0 1.5
19.8	48.66 .34	52.6 2.1	29.32 .31	60.6 1.6	14.81 .61	39.1 0.0	35.91 .29	46.6 1.7
29.8	49.01 +.36	50.5 +2.0	29.64 +.32	62.3 +1.8	15.45 +.63	39.5 +0.6	36.22 +.31	48.4 +1.9
June 8.7	49.37 .36	48.6 1.8	29.97 .33	64.2 2.0	16.10 .63	40.4 1.1	36.54 .32	50.4 2.0
18.7	49.73 .36	47.0 1.5	30.29 .32	66.4 2.2	16.74 .61	41.9 1.7	36.87 .32	52.5 2.1
28.7	50.09 .34	45.7 1.2	30.61 .31	68.6 2.3	17.36 .58	43.9 2.2	37.19 .31	54.7 2.1
July 8.7	50.42 .32	44.6 0.9	30.91 .29	71.0 2.4	17.93 .53	46.3 2.6	37.50 .29	56.8 2.1
18.6	50.73 +.29	43.9 +0.5	31.18 +.26	73.4 +2.3	18.45 +.47	49.2 +2.9	37.78 +.27	58.9 +2.0
28.6	51.00 .25	43.6 +0.2	31.43 .23	75.7 2.3	18.90 .40	52.3 3.2	38.04 .24	60.9 1.9
Aug. 7.6	51.24 .21	43.6 −0.2	31.63 .19	77.9 2.2	19.27 .32	55.7 3.5	38.27 .20	62.8 1.7
17.6	51.43 .16	43.9 0.5	31.80 .15	80.1 2.0	19.56 .23	59.4 3.6	38.45 .16	64.5 1.5
27.5	51.57 .12	44.5 0.8	31.93 .11	82.0 1.8	19.76 .15	63.1 3.7	38.60 .12	66.0 1.3
Sept. 6.5	51.66 +.07	45.4 −1.0	32.01 +.06	83.8 +1.6	19.88 +.06	66.9 +3.7	38.71 +.08	67.2 +1.1
16.5	51.70 +.02	46.5 1.2	32.05 +.02	85.3 1.4	19.90 −.03	70.5 3.6	38.78 .04	68.3 0.9
26.4	51.70 −.02	47.8 1.3	32.06 −.01	86.6 1.2	19.84 .11	74.1 3.5	38.81 +.01	69.0 0.6
Oct. 6.4	51.66 .06	49.1 1.3	32.03 .04	87.6 0.9	19.70 .19	77.5 3.2	38.81 −.02	69.6 0.4
16.4	51.58 .09	50.5 1.3	31.98 .07	88.4 0.7	19.49 .26	80.7 2.9	38.78 .05	70.0 +0.2
26.4	51.47 −.11	51.8 −1.2	31.90 −.09	89.0 +0.4	19.20 −.33	83.5 +2.6	38.72 −.07	70.1 0.0
Nov. 5.3	51.35 .13	53.0 1.1	31.80 .10	89.2 +0.2	18.86 .38	85.9 2.2	38.64 .09	70.1 −0.2
15.3	51.21 .14	54.0 0.9	31.69 .11	89.3 −0.1	18.46 .43	87.8 1.7	38.55 .10	70.0 0.3
25.3	51.07 .14	54.8 0.7	31.58 .11	89.1 0.3	18.03 .46	89.3 1.1	38.45 .11	69.5 0.5
Dec. 5.3	50.93 .13	55.4 0.4	31.46 .11	88.7 0.5	17.57 .48	90.1 +0.5	38.35 .11	69.0 0.6
15.2	50.81 −.12	55.7 −0.1	31.35 −.11	88.0 −0.7	17.10 −.49	90.4 0.0	38.25 −.11	68.4 −0.7
25.2	50.69 .11	55.7 +0.1	31.25 .10	87.2 0.9	16.63 .48	90.1 −0.6	38.15 .10	67.7 0.8
35.2	50.60 −.09	55.5 +0.4	31.16 −.09	86.2 −1.1	16.17 −.46	89.2 −1.2	38.06 −.09	67.0 −0.9

APPARENT PLACES FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ι Piscium.		γ Cephei.		Groombridge 4163.		ω Piscium.	
	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*	Right Ascension.	Declination *North.*
	h m 23 34	° ′ + 5 3	h m 23 34	° ′ +77 2	h m 23 49	° ′ +73 49	h m 23 53	° ′ + 6 16
	s	″	s	″	s	″	s	″
Jan. 0.2	29.23 −.09	4.1 −0.8	55.39 −.87	42.6 −0.5	37.52 −.68	30.3 −0.4	51.52 −.10	34.1 −0.7
10.2	29.14 .08	3.3 0.8	54.54 .82	41.8 1.1	36.84 .65	29.6 1.0	51.42 .09	33.3 0.7
20.2	29.06 .07	2.6 0.7	53.74 .75	40.4 1.7	36.21 .60	28.3 1.5	51.34 .08	32.6 0.7
30.1	29.00 .05	1.8 0.7	53.04 .64	38.4 2.2	35.64 .53	26.5 2.0	51.26 .07	31.9 0.7
Feb. 9.1	28.96 −.03	1.2 0.6	52.46 .51	36.0 2.6	35.16 .43	24.2 2.4	51.21 .05	31.2 0.6
19.1	28.94 .00	0.6 −0.5	52.02 −.36	33.3 −2.8	34.79 −.31	21.6 −2.7	51.17 −.02	30.6 −0.5
Mar. 1.1	28.96 +.03	0.2 0.3	51.75 −.18	30.3 3.0	34.54 .18	18.7 2.9	51.16 +.01	30.2 0.4
11.0	29.00 .06	0.0 −0.1	51.65 .00	27.3 3.0	34.43 −.03	15.7 3.0	51.19 .04	29.9 −0.2
21.0	29.08 .10	0.0 +0.1	51.74 +.18	24.2 2.9	34.47 +.11	12.7 2.9	51.24 .08	29.9 +0.1
30.9	29.19 .14	0.3 0.4	52.01 .36	21.4 2.7	34.66 .26	9.9 2.7	51.34 .12	30.1 0.3
Apr. 9.9	29.35 +.17	0.8 +0.7	52.46 +.53	18.7 −2.4	34.99 +.40	7.3 −2.4	51.48 +.16	30.5 +0.6
19.9	29.54 .21	1.7 1.0	53.07 .68	16.5 2.0	35.45 .52	5.0 2.1	51.65 .19	31.3 0.9
29.9	29.77 .24	2.8 1.2	53.81 .80	14.7 1.5	36.03 .63	3.1 1.6	51.86 .23	32.3 1.2
May 9.9	30.03 .27	4.2 1.5	54.67 .90	13.5 1.0	36.72 .72	1.8 1.1	52.11 .26	33.6 1.4
19.8	30.32 .30	5.8 1.7	55.62 .98	12.7 −0.4	37.48 .79	1.0 −0.5	52.39 .29	35.2 1.7
29.8	30.63 +.31	7.6 +1.9	56.63+1.02	12.6 +0.1	38.30 +.84	0.7 0.0	52.69 +.31	36.9 +1.8
June 8.8	30.95 .32	9.6 2.0	57.66 1.03	13.0 0.7	39.16 .86	1.0 +0.6	53.01 .32	38.9 2.0
18.7	31.27 .32	11.6 2.1	58.69 1.01	14.0 1.3	40.02 .85	1.9 1.2	53.33 .32	40.9 2.1
28.7	31.59 .32	13.8 2.1	59.68 .97	15.6 1.8	40.86 .83	3.4 1.7	53.66 .32	43.1 2.1
July 8.7	31.91 .30	15.9 2.1	60.62 .90	17.7 2.3	41.67 .78	5.3 2.2	53.98 .31	45.2 2.1
18.7	32.20 +.28	18.0 +2.0	61.48 +.81	20.2 +2.7	42.42 +.71	7.7 +2.6	54.28 +.29	47.3 +2.0
28.6	32.47 .25	19.9 1.9	62.25 .71	23.1 3.1	43.09 .63	10.5 3.0	54.55 .26	49.3 1.9
Aug. 7.6	32.70 .22	21.8 1.7	62.89 .58	26.3 3.4	43.68 .54	13.6 3.3	54.80 .23	51.2 1.8
17.6	32.90 .18	23.4 1.5	63.41 .45	29.8 3.6	44.17 .43	17.1 3.5	55.02 .20	52.9 1.6
27.6	33.06 .14	24.9 1.3	63.80 .31	33.5 3.8	44.55 .32	20.7 3.7	55.20 .16	54.4 1.4
Sept. 6.5	33.18 +.10	26.1 +1.1	64.04 +.17	37.3 +3.8	44.81 +.21	24.4 +3.8	55.34 +.12	55.8 +1.2
16.5	33.26 .06	27.0 0.9	64.14 +.02	41.2 3.8	44.96 +.09	28.2 3.8	55.44 .08	56.8 0.9
26.5	33.31 +.03	27.8 0.6	64.09 −.12	45.0 3.7	45.00 −.02	32.0 3.7	55.50 .05	57.6 0.7
Oct. 6.4	33.32 .00	28.3 0.4	63.90 .26	48.7 3.6	44.92 .13	35.7 3.6	55.53 +.01	58.2 0.5
16.4	33.30 −.03	28.6 +0.2	63.57 .39	52.2 3.4	44.73 .24	39.2 3.4	55.53 −.02	58.6 0.3
26.4	33.25 −.06	28.7 0.0	63.12 −.51	55.5 +3.1	44.44 −.34	42.5 +3.1	55.50 −.04	58.8 +0.1
Nov. 5.4	33.19 .08	28.6 −0.2	62.55 .62	58.3 2.7	44.04 .44	45.4 2.7	55.45 .06	58.8 −0.1
15.3	33.10 .09	28.4 0.3	61.88 .71	60.8 2.2	43.57 .52	47.9 2.2	55.38 .08	58.6 0.2
25.3	33.01 .10	28.0 0.4	61.12 .79	62.7 1.7	43.01 .58	49.9 1.8	55.29 .09	58.3 0.4
Dec. 5.3	32.91 .10	27.5 0.5	60.30 .85	64.1 1.1	42.40 .63	51.4 1.2	55.20 .09	57.9 0.5
15.3	32.81 −.10	26.9 −0.6	59.43 −.88	64.9 +0.5	41.74 −.67	52.3 +0.6	55.10 −.10	57.3 −0.6
25.2	32.71 .10	26.2 0.7	58.55 .88	65.1 −0.1	41.07 .68	52.6 0.0	55.00 .10	56.7 0.7
35.2	32.62 −.09	25.5 −0.8	57.68 −.86	64.6 −0.7	40.39 −.68	52.3 −0.6	54.90 −.10	56.0 −0.7

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Cassiop.	22 Androm.	σ Androm.	ι Ceti.	6 Urs. Min., S. P.	44 Piscium.	π Androm.	ο Cassiop.
	31° 26′	44° 31′	53° 48′	99° 25′	358° 17′	88° 39′	56° 52′	42° 18′
	h m 0 3	h m 0 4	h m 0 12	h m 0 14	h m 0 14	h m 0 19	h m 0 31	h m 0 38
	s	s	s	s	s	s	s	s
(Dec. 30.2)	29.79 −.33	47.62 −.21	46.56 −.15	1.15 − .09	43.69 +7.58	57.75 −.11	12.46 − .18	48.19 −.22
Jan. 9.2	29.47 .30	47.42 .19	46.41 .14	1.06 .09	51.30 7.50	57.64 .10	12.29 .16	47.97 .22
19.2	29.18 .27	47.24 .18	46.27 .14	0.97 .08	58.69 7.14	57.56 .08	12.15 .14	47.75 .21
29.1	28.92 −.24	47.06 −.17	46.13 −.13	0.89 − .08	65.57 +6.48	57.48 −.07	12.02 − .13	47.55 −.19
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Aug. 26.6	34.49 +.25	51.68 +.19	50.35 +.18	4.66 + .16	5.43 −3.22	61.18 +.16	16.01 + .22	52.01 +.26
Sept. 5.5	34.71 .18	51.85 .15	50.52 .15	4.81 .14	2.71 2.21	61.33 .14	16.21 .18	52.25 .21
15.5	34.85 .12	51.98 .11	50.66 .11	4.94 .11	1.00 1.20	61.47 .12	16.36 .14	52.44 .16
25.5	34.94 +.06	52.07 .07	50.75 .07	5.03 .07	0.32 − .12	61.56 .08	16.47 .10	52.57 .11
Oct. 5.5	34.97 .00	52.11 +.02	50.80 +.03	5.09 + .03	0.75 + .98	61.62 .04	16.55 .06	52.66 .07
15.4	34.94 −.06	52.10 −.03	50.82 .00	5.10 .00	2.28 +2.08	61.65 +.01	16.59 + .02	52.71 +.02
25.4	34.86 .11	52.05 .07	50.80 −.03	5.09 − .02	4.91 3.16	61.65 −.01	16.59 − .01	52.71 −.02
Nov. 4.4	34.71 .16	51.97 .10	50.75 .06	5.06 .05	8.59 4.19	61.62 .04	16.57 .04	52.67 .06
14.4	34.53 .20	51.85 .13	50.67 .09	5.00 .07	13.29 5.16	61.57 .06	16.51 .07	52.59 .10
24.3	34.30 .24	51.70 .16	50.57 .11	4.92 .08	18.90 6.00	61.50 .08	16.43 .09	52.48 .13
Dec. 4.3	34.04 −.27	51.54 −.17	50.46 −.12	4.83 − .09	25.29 +6.70	61.42 −.09	16.33 − .11	52.32 −.16
14.3	33.77 .29	51.36 .18	50.32 .14	4.74 .10	32.29 7.21	61.33 .09	16.21 .13	52.16 .18
24.2	33.47 .30	51.17 .19	50.17 .15	4.63 .11	39.71 7.50	61.24 .10	16.07 .14	51.97 .19
34.2	33.17 −.30	50.97 −.20	50.02 −.15	4.52 − .11	47.30 +7.55	61.13 −.11	15.92 − .15	51.78 −.19

Mean Solar Date.	δ Piscium.	γ Cassiop.	μ Androm.	43 Cephei.	κ Tucanæ.	f Piscium.	κ Octantis, S. P.	υ Androm.
	83° 0′	29° 51′	52° 5′	4° 19′	159° 26′	86° 57′	184° 45′	49° 7′
	h m 0 43	h m 0 50	h m 0 50	h m 0 54	h m 1 12	h m 1 12	h m 1 23	h m 1 30
	s	s	s	s	s	s	s	s
(Dec. 30.2)	10.65 −.11	17.53 −.33	51.51 −.15	10.91 −2.76	12.51 − .55	19.77 −.11	40.48 +2.85	34.24 −.15
Jan. 9.2	10.55 .10	17.21 .32	51.35 .16	8.13 2.77	11.97 .53	19.66 .11	43.37 2.90	34.08 .17
19.2	10.44 .10	16.88 .32	51.19 .17	5.36 2.74	11.44 .52	19.55 .11	46.27 2.84	33.90 .19
29.1	10.34 −.09	16.57 −.31	51.02 −.17	2.65 −2.67	10.93 − .50	19.44 −.11	49.04 +2.64	33.69 −.21
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 5.6	14.08 +.15	22.11 +.28	55.24 +.22	28.10 +1.55	16.62 + .41	22.91 +.22	37.75 −1.50	37.68 +.27
15.6	14.22 .13	22.36 .22	55.43 .16	29.45 1.15	16.98 .30	23.10 .17	36.43 1.09	37.93 .22
25.5	14.34 .10	22.55 .16	55.56 .12	30.35 .74	17.24 .20	23.23 .13	35.57 .65	38.13 .17
Oct. 5.5	14.42 .07	22.67 .10	55.67 .08	30.93 + .34	17.39 + .10	23.35 .10	35.15 − .18	38.28 .13
15.5	14.48 .04	22.74 +.04	55.73 .04	31.03 − .11	17.44 − .01	23.43 .07	35.22 + .34	38.40 .10
25.5	14.50 +.01	22.76 −.02	55.76 +.01	30.70 − .55	17.37 − .13	23.48 +.04	35.82 + .84	38.49 +.07
Nov. 4.4	14.49 −.02	22.70 .09	55.75 −.02	29.93 .99	17.19 .23	23.50 +.01	36.89 1.32	38.55 +.03
14.4	14.47 .04	22.58 .14	55.71 .05	28.73 1.39	16.92 .32	23.49 −.02	38.46 1.77	38.55 −.01
24.4	14.42 .06	22.42 .19	55.65 .08	27.15 1.78	16.56 .40	23.46 .04	40.43 2.17	38.52 .06
Dec. 4.3	14.35 .08	22.21 .23	55.55 .11	25.18 2.13	16.12 .46	23.41 .06	42.79 2.49	38.45 .08
14.3	14.27 −.09	21.96 −.27	55.43 −.13	22.90 −2.40	15.65 − .50	23.35 −.08	45.40 +2.71	38.36 −.12
24.3	14.17 .10	21.67 .30	55.28 .15	20.38 2.61	15.13 .52	23.26 .09	48.21 2.85	38.22 .14
34.3	14.06 −.11	21.36 −.31	55.13 −.15	17.68 −2.75	14.60 − .53	23.16 −.10	51.13 +2.89	38.07 −.15

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	π Piscium.	ν Piscium.	ζ Ceti.	γ Androm.	β Trianguli.	4 Urs. Min., S. P.	γ Trianguli.	67 Ceti.
	78° 24′	85° 3′	100° 52′	48° 11′	55° 31′	348° 3′	56° 39′	96° 55′
	$1^h\ 31^m$	$1^h\ 35^m$	$1^h\ 46^m$	$1^h\ 57^m$	$2^h\ 3^m$	$2^h\ 9^m$	$2^h\ 11^m$	$2^h\ 11^m$
	s	s	s	s	s	s	s	s
(Dec. 30.3)	28.72 −.11	54.98 − .10	13.97 −.11	23.39 −.16	14.15 −.14	15.35 + .99	0.78 −.11	42.10 −.10
Jan. 9.3	28.61 .11	54.88 .11	13.86 .11	23.23 .17	14.01 .15	16.40 1.08	0.66 .14	42.00 .11
19.2	28.50 .11	54.77 .12	13.75 .12	23.06 .18	13.86 .16	17.52 1.11	0.50 .15	41.89 .12
29.2	28.38 .11	54.65 .12	13.62 .13	22.87 .19	13.70 .17	18.66 1.13	0.34 .16	41.76 .13
Feb. 8.2	28.27 .12	54.54 .11	13.49 .13	22.67 .18	13.53 .17	19.78 1.10	0.18 .17	41.63 .13
18.2	28.15 −.12	54.44 − .10	13.37 −.12	22.50 −.16	13.36 −.17	20.85 +1.03	0.01 −.17	41.50 −.13
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	32.11 +.16	58.31 + .14	17.11 +.15	27.15 +.22	17.70 +.21	12.79 − .54	4.23 +.22	45.06 +.17
Oct. 5.5	32.25 .12	58.44 .12	17.25 .13	27.35 .18	17.89 .17	12.30 .42	4.43 .18	45.22 .15
15.5	32.35 .08	58.55 .09	17.36 .10	27.50 .14	18.04 .13	11.95 .26	4.59 .14	45.35 .12
25.5	32.42 +.05	58.62 + .06	17.45 +.07	27.62 +.10	18.16 +.10	11.78 − .09	4.72 +.11	45.46 +.09
Nov. 4.5	32.46 +.03	58.67 .03	17.50 .04	27.70 .06	18.25 .07	11.77 + .09	4.81 .08	45.54 .06
14.4	32.48 .00	58.69 + .01	17.52 +.01	27.74 +.02	18.30 +.03	11.96 .28	4.88 .05	45.58 +.03
24.4	32.46 −.02	58.68 − .02	17.51 −.02	27.75 −.02	18.31 −.01	12.33 .46	4.90 +.01	45.60 .00
Dec. 4.4	32.43 .05	58.64 .04	17.48 .04	27.71 .06	18.29 .04	12.88 .63	4.89 −.03	45.59 −.03
14.3	32.37 −.07	58.59 − .07	17.43 −.07	27.64 −.09	18.24 −.07	13.60 + .79	4.85 −.06	45.55 −.06
24.3	32.29 .08	58.51 .09	17.35 .10	27.53 .12	18.16 .10	14.46 .94	4.77 .09	45.48 .08
34.3	32.20 −.09	58.41 − .10	17.24 −.12	27.39 −.15	18.05 −.12	15.47 +1.05	4.67 −.11	45.40 −.09

Mean Solar Date.	δ Hydri.	μ Hydri.	δ Ceti.	θ Persei.	σ Arietis.	47 Cephei.	ε Arietis.	β Persei. (*Algol.*)
	159° 9′	169° 34′	90° 8′	41° 13′	75° 21′	11° 0′	69° 5′	49° 27′
	$2^h\ 19^m$	$2^h\ 33^m$	$2^h\ 34^m$	$2^h\ 36^m$	$2^h\ 45^m$	$2^h\ 51^m$	$2^h\ 53^m$	$3^h\ 1^m$
	s	s	s	s	s	s	s	s
(Dec. 30.3)	54.64 −.52	60.99 −1.12	3.39 −.08	57.76 −.14	38.76 −.07	61.00 − .71	9.40 −.06	16.64 −.07
Jan. 9.3	54.11 .55	59.83 1.19	3.30 .10	57.60 .18	38.68 .09	60.23 .83	9.32 .09	16.54 .13
19.3	53.54 .57	58.60 1.24	3.19 .12	57.40 .21	38.57 .11	59.35 .92	9.21 .12	16.38 .17
29.2	52.97 .57	57.36 1.24	3.06 .13	57.18 .23	38.45 .13	58.39 1.00	9.07 .14	16.20 .19
Feb. 8.2	52.40 .56	56.13 1.22	2.93 .13	56.95 .23	38.30 .14	57.35 1.04	8.93 .15	16.01 .20
18.2	51.85 −.54	54.92 −1.18	2.79 −.14	56.72 −.22	38.16 −.13	56.32 −1.00	8.78 −.14	15.81 −.20
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Sept. 25.6	57.01 +.35	62.28 + .71	6.21 +.21	61.46 +.30	41.67 +.22	68.00 + .95	12.34 +.21	19.88 +.28
Oct. 5.6	57.32 .27	62.89 .51	6.40 .17	61.74 .26	41.88 .19	68.88 .81	12.55 .20	20.15 .25
15.5	57.54 .17	63.29 .30	6.55 .14	61.98 .22	42.06 .16	69.62 .67	12.75 .18	20.39 .22
25.5	57.65 +.06	63.48 + .08	6.68 +.11	62.17 +.17	42.20 +.13	70.21 + .50	12.92 +.15	20.60 +.18
Nov. 4.5	57.65 −.06	63.44 − .15	6.78 .09	62.31 .12	42.32 .11	70.62 .32	13.05 .12	20.76 .14
14.5	57.53 .17	63.18 .37	6.86 .06	62.41 .08	42.42 .08	70.85 + .15	13.15 .08	20.88 .11
24.4	57.32 .26	62.69 .58	6.90 +.03	62.48 +.03	42.48 .04	70.94 − .02	13.22 .05	20.98 .07
Dec. 4.4	57.02 .35	62.02 .76	6.91 .00	62.48 −.02	42.50 +.01	70.81 .22	13.26 +.02	21.03 +.03
14.4	56.63 −.43	61.17 − .93	6.89 −.03	62.45 −.07	42.50 −.02	70.48 − .42	13.26 −.01	21.03 −.01
24.4	56.17 .49	60.16 1.06	6.85 .06	62.35 .11	42.47 .05	69.97 .59	13.23 .04	21.00 .06
34.3	55.66 −.54	59.05 −1.15	6.78 −.08	62.22 −.15	42.40 −.08	69.30 − .74	13.18 −.06	20.91 −.10

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT OF WASHINGTON.

Mean Solar Date.	ι Hydri.	ρ Octantis, S. P.	*f* Tauri.	γ Camelop.	γ Hydri.	ε Persei.	A¹ Tauri.	*c* Persei.
	167° 47′	185° 53′	77° 26′	19° 0′	164° 34′	50° 18′	68° 12′	42° 34′
	h m 3 18	h m 3 18	h m 3 25	h m 3 39	h m 3 48	h m 3 50	h m 3 58	h m 4 0
	s	s	s	s	s	s	s	s
(Dec.30.4)	42.27 − .85	39.82 +2.21	1.78 − .05	11.64 −.24	57.87 −.59	45.09 −.05	26.44 −.02	58.83 −.05
Jan. 9.3	41.36 .97	42.10 2.35	1.72 .08	11.34 .36	57.22 .70	45.02 .09	26.40 .06	58.76 .10
19.3	40.34 1.05	44.51 2.47	1.63 .11	10.93 .45	56.47 .79	44.91 .13	26.32 .10	58.62 .15
29.3	39.27 1.09	47.03 2.52	1.51 .13	10.45 .51	55.65 .84	44.75 .17	26.21 .13	58.46 .19
Feb. 8.3	38.17 1.10	49.55 2.52	1.37 .14	9.92 .55	54.79 .88	44.57 .19	26.06 .15	58.25 .22
18.2	37.08 −1.08	52.08 +2.47	1.22 − .15	9.35 −.57	53.89 −.90	44.37 −.20	25.91 −.16	58.03 −.24
28.2	36.01 −1.04	54.49 +2.34	1.07 − .15	8.78 −.55	52.99 −.88	44.17 −.19	25.74 −.17	57.78 −.25
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 5.6	41.93 + .63	48.63 −1.04	4.60 + .24	16.60 +.64	56.81 +.62	48.23 +.32	29.17 +.28	62.10 +.34
15.6	42.47 .45	47.75 .70	4.82 .20	17.20 .56	57.35 .46	48.53 .28	29.43 .24	62.43 .32
25.5	42.83 + .26	47.24 − .31	5.00 + .17	17.73 +.46	57.74 +.33	48.79 +.25	29.65 +.21	62.75 +.30
Nov. 4.5	42.99 + .07	47.14 + .13	5.15 .14	18.15 .37	58.02 .20	49.03 .21	29.86 .18	63.02 .26
14.5	42.97 − .12	47.50 .56	5.29 .11	18.49 .28	58.13 +.05	49.22 .17	30.04 .15	63.26 .21
24.5	42.76 .31	48.25 .96	5.39 .08	18.71 .16	58.11 −.10	49.37 .13	30.17 .11	63.43 .16
Dec. 4.5	42.36 .49	49.42 1.36	5.45 .05	18.82 +.05	57.94 .25	49.49 .09	30.27 .08	63.57 .11
14.4	41.79 − .65	50.97 +1.71	5.48 + .01	18.82 −.06	57.62 −.40	49.55 +.04	30.34 +.05	63.65 +.05
24.4	41.07 .79	52.83 2.00	5.48 − .02	18.69 .18	57.13 .53	49.56 −.01	30.37 +.02	63.67 .00
34.4	40.21 − .92	54.97 +2.23	5.44 − .06	18.45 −.31	56.56 −.63	49.53 −.05	30.37 −.01	63.64 −.06

Mean Solar Date.	o¹ Eridani.	η Urs.Min., S. P.	δ Mensæ.	*m* Persei.	τ Tauri.	*i* Tauri.	ζ Aurigæ.	β Eridani.
	97° 7′	346° 0′	170° 28′	47° 10′	67° 15′	71° 20′	49° 5′	95° 13′
	h m 4 6	h m 4 20	h m 4 25	h m 4 25	h m 4 35	h m 4 45	h m 4 55	h m 5 2
	s	s	s	s	s	s	s	s
(Dec.30.4)	42.35 − .02	32.64 + .43	17.68 − .90	58.41 −.02	53.84 +.01	11.30 +.02	5.24 +.02	39.34 +.02
Jan. 9.4	42.31 .06	33.17 .62	16.68 1.09	58.37 .06	53.83 −.03	11.30 −.02	5.24 −.01	39.34 −.02
19.4	42.23 .09	33.87 .75	15.51 1.25	58.29 .11	53.78 .07	11.26 .06	5.19 .06	39.30 .06
29.3	42.13 .12	34.68 .84	14.19 1.37	58.14 .16	53.68 .11	11.18 .10	5.08 .12	39.22 .09
Feb. 8.3	41.99 .14	35.54 .90	12.78 1.44	57.97 .19	53.55 .14	11.06 .13	4.92 .17	39.11 .13
18.3	41.84 − .16	36.48 + .95	11.31 −1.49	57.76 −.21	53.40 −.16	10.91 −.16	4.73 −.20	38.96 −.16
28.3	41.67 .17	37.44 .95	9.81 1.49	57.54 .22	53.23 .17	10.73 .16	4.52 .21	38.80 .17
Mar.10.2	41.50 − .16	38.37 + .90	8.33 −1.45	57.33 −.21	53.07 −.16	10.58 −.13	4.31 −.20	38.62 −.18
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 15.6	44.78 + .22	31.87 − .73	13.06 + .85	61.70 +.31	56.61 +.28	13.93 +.27	8.26 +.34	41.41 +.23
25.6	44.99 + .20	31.20 − .61	13.83 + .68	62.01 +.30	56.88 +.25	14.19 +.25	8.59 +.32	41.65 +.24
Nov. 4.6	45.18 .17	30.65 .47	14.41 .46	62.31 .27	57.12 .22	14.44 .23	8.90 .30	41.89 .22
14.5	45.33 .14	30.27 .31	14.74 + .21	62.55 .23	57.33 .19	14.66 .20	9.19 .26	42.09 .19
24.5	45.46 .11	30.03 − .15	14.82 − .04	62.76 .18	57.51 .16	14.84 .16	9.43 .22	42.28 .16
Dec. 4.5	45.55 .07	29.97 + .02	14.65 .30	62.92 .13	57.65 .12	14.98 .13	9.63 .17	42.42 .13
14.5	45.60 + .03	30.08 + .20	14.22 − .55	63.02 +.08	57.75 +.08	15.10 +.09	9.77 +.12	42.53 +.09
24.4	45.62 − .01	30.37 .37	13.56 .78	63.08 +.03	57.81 .04	15.17 .05	9.86 .07	42.60 .05
34.4	45.59 − .05	30.83 + .53	12.67 − .99	63.08 −.03	57.84 +.01	15.20 +.01	9.90 +.02	42.63 +.01

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	τ Orionis.	χ Aurigæ.	Groombr. 944.	κ Orionis.	ν Aurigæ.	δ Doradus.	β Aurigæ.	θ Aurigæ.
	96° 58′ h m 5 12	57° 53′ h m 5 25	4° 51′ h m 5 28	99° 42′ h m 5 42	50° 53′ h m 5 44	155° 47′ h m 5 44	45° 4′ h m 5 51	52° 48′ h m 5 52
	s	s	s	s	s	s	s	s
(Dec.30.5)	28.62 +.01	50.96 +.07	15.90 − .15	44.84 +.05	9.88 +.09	38.48 −.15	46.73 +.10	30.96 + .10
Jan. 9.4	28.62 −.03	51.00 +.02	15.50 .65	44.87 .00	9.94 +.03	38.29 .23	46.80 +.03	31.03 + .04
19.4	28.59 .05	50.99 −.03	14.61 1.13	44.85 −.04	9.94 −.03	38.02 .32	46.80 −.03	31.04 − .02
29.4	28.52 .09	50.93 .08	13.25 1.54	44.79 .08	9.88 .08	37.66 .40	46.74 .09	30.99 .07
Feb. 8.3	28.40 .13	50.82 .13	11.53 1.88	44.69 .12	9.78 .13	37.22 .47	46.62 .14	30.90 .12
18.3	28.26 −.15	50.66 −.16	9.49 −2.14	44.55 −.15	9.62 −.17	36.72 −.52	46.45 −.18	30.75 − .16
28.3	28.10 .16	50.49 .18	7.25 2.30	44.40 .16	9.43 .19	36.19 .55	46.25 .21	30.57 .18
Mar. 10.3	27.93 .17	50.30 .19	4.89 2.36	44.23 .17	9.23 .20	35.62 .57	46.03 .22	30.38 .19
20.3	27.76 −.17	50.10 −.20	2.53 −2.32	44.06 −.17	9.03 −.20	35.05 −.56	45.80 −.20	30.19 − .19
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Oct. 25.6	30.85 +.23	53.91 +.31	27.42 +2.66	46.83 +.25	12.86 +.36	37.32 +.45	49.80 +.40	33.84 + .35
Nov. 4.6	31.08 .22	54.21 .29	29.91 2.32	47.08 .24	13.21 .33	37.75 .40	50.18 .37	34.18 .33
14.6	31.30 .20	54.49 .26	32.07 2.00	47.32 .22	13.53 .30	38.12 .33	50.53 .34	34.50 .30
24.5	31.49 .17	54.74 .23	33.91 1.62	47.54 .20	13.82 .27	38.40 .23	50.86 .30	34.79 .27
Dec. 4.5	31.64 .13	54.96 .19	35.30 1.16	47.72 .16	14.07 .23	38.58 .13	51.13 .25	35.05 .23
14.5	31.75 +.09	55.12 +.14	36.23 + .68	47.86 +.12	14.27 +.18	38.67 +.04	51.37 +.20	35.26 + .19
24.5	31.83 .06	55.24 .10	36.65 + .17	47.96 .08	14.42 .13	38.66 −.07	51.54 .15	35.42 .14
34.4	31.87 +.02	55.33 +.07	36.58 − .33	48.02 +.04	14.53 +.08	38.53 −.19	51.66 +.09	35.54 + .09

Mean Solar Date.	η Geminor.	ψ^1 Aurigæ.	ν Geminor.	χ Draconis, S. P.	ε Geminor.	ψ^5 Aurigæ.	θ Geminor.	ζ Mensæ.
	67° 28′ h m 6 8	40° 40′ h m 6 16	69° 43′ h m 6 22	342° 41′ h m 6 22	64° 46′ h m 6 37	46° 19′ h m 6 39	55° 55′ h m 6 45	170° 42′ h m 6 48
	s	s	s	s	s	s	s	s
(Dec.30.5)	29.97 +.10	45.87 +.15	41.33 + .11	53.38 +.04	25.87 +.14	7.52 +.15	49.61 +.14	60.01 − .15
Jan. 9.5	30.05 +.05	45.98 +.07	41.42 .07	53.48 .16	25.98 .09	7.64 .09	49.73 .10	59.72 .42
19.4	30.08 .00	46.01 .00	41.46 + .02	53.71 .29	26.04 +.04	7.70 +.03	49.81 +.04	59.17 .67
29.4	30.05 −.05	45.97 −.07	41.45 − .03	54.07 .42	26.05 −.02	7.70 −.03	49.82 −.02	58.38 .90
Feb. 8.4	29.98 .09	45.87 .13	41.40 .07	54.55 .52	26.00 .07	7.64 .09	49.78 .07	57.38 1.09
18.4	29.88 −.13	45.71 −.18	41.30 − .11	55.11 +.61	25.91 −.11	7.51 −.15	49.69 −.12	56.20 −1.26
28.3	29.73 .16	45.50 .22	41.16 .15	55.78 .70	25.78 .14	7.34 .18	49.54 .16	54.87 1.38
Mar. 10.3	29.57 .17	45.26 .25	41.00 .16	56.52 .74	25.62 .16	7.16 .20	49.37 .18	53.44 1.47
20.3	29.39 .18	45.01 .26	40.83 .17	57.27 .75	25.45 .17	6.95 .22	49.18 .19	51.94 1.52
30.2	29.22 .17	44.76 .25	40.66 .16	58.03 .76	25.27 .17	6.72 .23	49.00 .19	50.40 1.54
Apr. 9.2	29.06 −.16	44.51 −.23	40.51 − .14	58.79 +.75	25.11 −.15	6.50 −.21	48.80 −.19	48.86 −1.52
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 14.6	33.05 +.28	49.72 +.39	44.28 + .30	53.51 −.58	28.88 +.31	11.00 +.37	52.79 +.34	52.55 + .97
24.6	33.32 .25	50.09 .35	44.56 .26	52.99 .46	29.18 .28	11.36 .34	53.12 .31	53.41 .75
Dec. 4.6	33.56 .22	50.42 .30	44.81 .23	52.60 .34	29.45 .25	11.69 .30	53.42 .28	54.04 .52
14.5	33.76 +.18	50.69 +.25	45.02 + .19	52.31 −.22	29.69 +.21	11.97 +.25	53.68 +.24	54.45 + .28
24.5	33.91 .14	50.92 .19	45.19 .15	52.17 −.08	29.88 .17	12.22 .20	53.90 .20	54.59 + .01
34.5	34.03 +.10	51.07 +.13	45.32 + .11	52.18 +.07	30.03 +.12	12.39 +.15	54.07 +.15	54.46 − .27

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	ζ Geminor.	63 Aurigæ.	25 Camelop.	γ^2 Volantis.	β Can. Min.	26 Lyncis.	Groombr. 1374.	ω^1 Cancri.
	69° 16′	50° 30′	7° 23′	160° 20′	81° 30′	42° 10′	15° 48′	64° 19′
	h m	h m	h m	h m	h m	h m	h m	h m
	6 57	7 4	7 8	7 9	7 21	7 47	7 47	7 54
	s	s	s	s	s	s	s	s
(Dec. 30.5)	50.59 +.14	23.46 +.17	57.16 + .74	42.18 + .06	25.31 +.14	1.50 +.30	35.17 +.56	32.37 +.21
Jan. 9.5	50.71 .10	23.61 .13	57.71 .37	42.17 − .07	25.44 .11	1.74 .19	35.63 .36	32.56 .17
19.5	50.79 +.05	23.71 +.07	57.89 + .02	42.03 .20	25.54 .07	1.89 .12	35.89 .18	32.70 .11
29.4	50.81 .00	23.74 .00	57.75 − .32	41.78 .31	25.58 +.02	1.99 +.06	35.99 +.01	32.78 +.05
Feb. 8.4	50.79 −.04	23.71 −.05	57.25 .65	41.40 .42	25.57 −.03	2.00 −.02	35.92 −.16	32.81 .00
18.4	50.72 −.09	23.63 −.11	56.45 − .94	40.93 − .51	25.52 −.07	1.95 −.09	35.69 −.30	32.78 −.05
28.4	50.60 .13	23.48 .16	55.38 1.18	40.38 .58	25.43 .10	1.82 .15	35.32 .43	32.72 .09
Mar. 10.3	50.46 .15	23.31 .19	54.10 1.36	39.76 .64	25.31 .13	1.65 .19	34.83 .53	32.61 .14
20.3	50.30 .16	23.11 .20	52.67 1.46	39.09 .68	25.16 .15	1.45 .21	34.26 .61	32.45 .16
30.3	50.13 .17	22.91 .20	51.19 1.50	38.40 .69	25.00 .16	1.23 .23	33.62 .65	32.29 .16
Apr. 9.2	49.96 −.16	22.71 −.19	49.66 −1.50	37.71 − .68	24.84 −.16	0.99 −.24	32.95 −.67	32.13 −.15
19.2	49.81 −.14	22.53 −.16	48.19 −1.45	37.04 − .65	24.69 −.15	0.76 −.23	32.28 −.65	31.98 −.14
. .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Nov. 24.6	53.71 +.30	27.04 +.34	67.09 +1.66	40.63 + .47	28.08 +.28	5.11 +.43	40.64 +.92	35.35 +.34
Dec. 4.6	53.99 .26	27.37 .31	68.66 1.47	41.05 .37	28.35 .26	5.52 .39	41.53 .82	35.68 .31
14.6	54.23 +.22	27.67 +.27	70.03 +1.22	41.37 + .26	28.60 +.23	5.89 +.35	42.31 +.72	35.98 +.28
24.5	54.44 .18	27.92 .23	71.09 .90	41.56 + .13	28.82 .19	6.22 .31	42.98 .61	36.25 .25
34.5	54.60 +.14	28.13 +.18	71.83 + .57	41.63 .00	28.98 +.14	6.51 +.27	43.52 +.49	36.49 +.22

Mean Solar Date.	ζ^1 Cancri.	β Cancri.	30 Monocerotis.	θ Chamæleontis.	σ Hydræ.	γ Cancri.	σ^2 Cancri. (*mean.*)	θ Hydræ.
	72° 2′	80° 29′	93° 34′	167° 9′	86° 17′	68° 9′	59° 1′	87° 14′
	h m	h m	h m	h m	h m	h m	h m	h m
	8 6	8 10	8 20	8 23	8 33	8 37	8 47	9 8
	s	s	s	s	s	s	s	s
(Dec. 30.6)	9.13 +.21	47.07 +.21	22.79 ∓ .20	52.91 + .32	14.14 +.22	10.28 +.26	47.94 +.27	51.86 +.27
Jan. 9.5	9.32 .16	47.26 .17	22.97 .16	53.15 + .16	14.34 .18	10.51 .20	48.19 .23	52.10 .21
19.5	9.46 .12	47.40 .12	23.10 .11	53.23 − .02	14.50 .13	10.68 .15	48.39 .17	52.29 .16
29.5	9.56 .07	47.49 .07	23.19 .07	53.10 .21	14.61 .09	10.81 .10	48.53 .12	52.42 .11
Feb. 8.5	9.60 +.02	47.53 +.02	23.23 + .02	52.81 .38	14.67 +.04	10.88 +.05	48.63 .07	52.52 .07
18.4	9.59 −.03	47.52 −.03	23.23 − .02	52.35 − .54	14.68 −.02	10.90 .00	48.67 +.01	52.56 +.02
28.4	9.53 .08	47.47 .07	23.18 .06	51.72 .70	14.64 .06	10.87 −.05	48.64 −.05	52.55 −.02
Mar. 10.4	9.43 .12	47.38 .11	23.09 .10	50.96 .80	14.56 .09	10.81 .09	48.57 .09	52.51 .06
20.4	9.30 .14	47.26 .14	22.98 .13	50.13 .88	14.46 .12	10.70 .12	48.47 .13	52.43 .09
30.3	9.15 .15	47.11 .15	22.83 .15	49.19 .96	14.33 .14	10.56 .14	48.32 .15	52.33 .11
Apr. 9.3	9.00 −.16	46.97 −.15	22.68 − .15	48.19 −1.01	14.18 −.15	10.41 −.15	48.17 −.16	52.21 −.12
19.3	8.84 .15	46.82 .14	22.53 .14	47.18 1.02	14.04 .14	10.26 .15	48.00 .17	52.08 .13
29.2	8.70 .13	46.68 .13	22.39 .13	46.15 1.01	13.91 .13	10.11 .14	47.84 .15	51.95 .13
May 9.2	8.58 −.11	46.56 −.11	22.27 − .11	45.15 − .97	13.78 −.12	9.98 −.12	47.70 −.12	51.82 −.13

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	β Argus.	α Lyncis.	10 Leonis Minoris.	ο Leonis.	ζ Chamæleontis.	19 Leonis Minoris.	π Leonis.	λ Ursæ Majoris.
	159° 17′	55° 10′	53° 8′	79° 38′	170° 28′	48° 26′	81° 27′	46° 33′
	h m 9 12	h m 9 14	h m 9 27	h m 9 35	h m 9 36	h m 9 51	h m 9 54	h m 10 10
	s	s	s	s	s	s	s	s
(Dec.30.6)	3.96 +.41	37.13 +.32	45.12 +.31	30.42 + .28	63.33 + .84	12.90 + .36	37.44 +.28	43.52 +.39
Jan. 9.6	4.31 .29	37.42 .27	45.42 .28	30.68 .24	64.06 .62	13.24 .32	37.71 .26	43.89 .35
19.6	4.54 .17	37.66 .21	45.69 .24	30.90 .20	64.57 .40	13.54 .27	37.95 .22	44.22 .30
29.5	4.65 +.05	37.84 .15	45.89 .17	31.07 .15	64.85 + .16	13.78 .21	38.14 .17	44.48 .24
Feb. 8.5	4.64 −.07	37.96 .09	46.03 .11	31.20 .10	64.89 − .08	13.95 .14	38.28 .12	44.70 .17
18.5	4.51 −.18	38.02 +.03	46.11 +.05	31.27 + .05	64.69 − .31	14.06 + .08	38.37 +.07	44.82 +.10
28.5	4.28 .28	38.03 −.02	46.13 .00	31.30 .00	64.28 .51	14.11 + .02	38.41 +.02	44.90 +.05
Mar. 10.4	3.95 .37	37.98 .07	46.10 −.05	31.28 − .04	63.67 .71	14.10 − .03	38.41 −.02	44.91 −.01
20.4	3.54 .44	37.88 .12	46.02 .11	31.22 .07	62.87 .88	14.04 .08	38.37 .06	44.87 .07
30.4	3.07 .50	37.74 .15	45.89 .15	31.14 .10	61.92 1.02	13.93 .13	38.30 .08	44.77 .12
Apr. 9.3	2.55 −.54	37.59 −.16	45.74 −.16	31.03 − .12	60.84 −1.13	13.78 − .16	38.21 −.10	44.63 −.15
19.3	2.00 .56	37.42 .17	45.58 .17	30.91 .13	59.67 1.21	13.61 .17	38.09 .11	44.47 .17
29.3	1.43 .57	37.25 .17	45.41 .17	30.78 .13	58.42 1.27	13.44 .18	37.98 .12	44.30 .18
May 9.3	0.85 .58	37.08 .16	45.25 .16	30.66 .12	57.14 1.30	13.26 .18	37.86 .12	44.11 .19
19.2	0.28 −.57	36.93 −.13	45.09 −.16	30.54 − .11	55.83 −1.31	13.08 − .17	37.74 −.11	43.93 −.18

Mean Solar Date.	μ Hydræ.	β Leonis Minoris.	α Antliæ.	β Octantis, S. P.	41 Leonis Minoris.	δ² Chamæleontis.	46 Leonis Minoris.	Groombr. 1706.
	106° 18′	52° 45′	120° 32′	188° 4′	66° 15′	169° 59′	55° 13′	11° 40′
	h m 10 20	h m 10 21	h m 10 22	h m 10 35	h m 10 37	h m 10 44	h m 10 47	h m 10 51
	s	s	s	s	s	s	s	s
Jan. 19.6	58.82 +.24	46.98 +.29	18.95 +.24	8.83 − .68	40.48 + .26	49.96 + .77	24.55 +.31	35.53 +.97
29.6	59.03 .18	47.24 .23	19.16 .18	8.29 .41	40.72 .22	50.63 .57	24.83 .25	36.41 .79
Feb. 8.6	59.18 .13	47.44 .17	19.31 .13	8.01 − .16	40.92 .17	51.10 .36	25.05 .20	37.11 .60
18.5	59.29 .08	47.57 .11	19.42 .08	7.97 + .08	41.06 .12	51.36 + .15	25.22 .15	37.60 .39
28.5	59.34 +.04	47.66 +.06	19.47 +.03	8.16 .31	41.16 .07	51.40 − .06	25.34 .09	37.89 +.18
Mar. 10.5	59.36 .00	47.69 .00	19.47 −.01	8.59 + .54	41.20 + .02	51.24 − .25	25.39 +.04	37.95 −.04
20.4	59.34 −.04	47.67 −.05	19.44 .05	9.25 .76	41.20 − .02	50.90 .44	25.41 −.01	37.81 .25
30.4	59.28 .07	47.60 .09	19.37 .09	10.11 .97	41.16 .05	50.37 .61	25.37 .05	37.46 .43
Apr. 9.4	59.19 .09	47.49 .12	19.26 .12	11.20 1.17	41.09 .08	49.69 .75	25.29 .09	36.95 .58
19.4	59.09 .10	47.35 .14	19.14 .14	12.45 1.33	41.00 .10	48.88 .87	25.20 .12	36.30 .71
29.3	58.98 −.11	47.21 −.15	18.99 −.15	13.85 +1.46	40.90 − .12	47.95 − .98	25.07 −.13	35.54 −.80
May 9.3	58.86 .12	47.05 .16	18.84 .15	15.36 1.57	40.77 .13	46.91 1.06	24.94 .14	34.70 .87
19.3	58.73 .13	46.89 .15	18.70 .15	16.99 1.66	40.65 .12	45.83 1.11	24.79 .14	33.81 .90
29.3	58.61 .12	46.74 .14	18.55 .13	18.68 1.69	40.53 .11	44.70 1.14	24.64 .13	32.91 .89
June 8.2	58.50 −.11	46.61 −.12	18.43 −.10	20.37 +1.66	40.42 − .10	43.54 −1.15	24.52 −.12	32.03 −.87

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	η Octantis.	p^3 Leonis.	ψ Urs. Maj.	ν Urs. Maj.	ξ Hydræ.	χ Urs. Maj.	π Virginis.	ε Corvi.
	174° 1′	87° 28′	44° 56′	56° 20′	121° 17′	41° 38′	82° 48′	112° 2′
	h m 10 59	h m 11 1	h m 11 3	h m 11 12	h m 11 27	h m 11 40	h m 11 55	h m 12 4
	s	s	s	s	s	s	s	s
Feb. 8.6	69.56 + .70	31.07 + .15	44.65 +.25	47.32 +.24	48.33 +.22	29.65 +.30	27.68 +.23	41.34 + .24
18.6	70.09 .36	31.21 .13	44.86 .17	47.52 .17	48.52 .16	29.92 .23	27.89 .18	41.56 .19
28.5	70.28 + .03	31.33 .09	45.00 .11	47.65 .11	48.65 .11	30.12 .16	28.05 .14	41.73 .15
Mar. 10.5	70.16 − .29	31.39 .05	45.08 +.05	47.74 .06	48.74 .06	30.24 .10	28.17 .10	41.86 .11
20.5	69.69 .61	31.42 + .01	45.10 .00	47.77 +.01	48.77 +.02	30.31 +.04	28.25 .06	41.94 .07
30.4	68.95 − .89	31.40 − .03	45.07 −.05	47.76 −.03	48.78 −.01	30.32 −.02	28.30 +.02	41.99 + .04
Apr. 9.4	67.91 1.16	31.36 .06	44.99 .09	47.71 .06	48.75 .04	30.27 .07	28.30 −.01	42.01 + .01
19.4	66.64 1.39	31.29 .08	44.88 .13	47.64 .09	48.69 .07	30.18 .12	28.28 .03	42.00 − .02
29.4	65.13 1.59	31.21 .09	44.72 .16	47.53 .11	48.60 .09	30.04 .15	28.23 .05	41.96 .05
May 9.3	63.46 1.74	31.12 .10	44.55 .17	47.41 .13	48.50 .11	29.88 .17	28.17 .06	41.90 .07
19.3	61.65 −1.87	31.02 − .10	44.38 −.18	47.27 −.14	48.38 −.12	29.70 −.19	28.10 −.07	41.82 − .08
29.3	59.73 1.94	30.92 .10	44.19 .19	47.13 .15	48.26 .13	29.51 .20	28.02 .08	41.74 .09
June 8.3	57.77 1.96	30.82 .09	44.01 .18	46.98 .13	48.11 .13	29.30 .19	27.92 .09	41.64 .10
18.2	55.82 −1.94	30.73 − .09	43.84 −.17	46.86 −.11	47.99 −.12	29.12 −.17	27.83 −.08	41.54 − .10

Mean Solar Date.	2 Can. Ven.	6 Urs. Min.	δ^2 Corvi.	β Can. Ven.	γ Virginis, (*mean.*)	31 Comæ Berenices.	γ Cassiop., S. P.	43 Cephei, S. P.
	48° 45′	1° 43′	105° 56′	48° 4′	90° 52′	61° 53′	330° 9′	355° 41′
	h m 12 10	h m 12 14	h m 12 24	h m 12 28	h m 12 36	h m 12 46	h m 12 50	h m 12 53
	s	s	s	s	s	s	s	s
Feb. 8.6	50.85 + .29	71.94 +5.65	23.83 +.25	44.40 +.31	18.36 +.27	33.43 +.27	16.28 −.31	60.05 −2.36
18.6	51.12 .24	77.02 4.48	24.06 .21	44.69 .26	18.60 .22	33.68 .23	16.01 .23	57.88 1.97
28.6	51.34 .19	80.89 3.23	24.25 .16	44.93 .21	18.79 .17	33.89 .19	15.82 .16	56.11 1.55
Mar. 10.5	51.49 .13	83.48 1.88	24.39 .12	45.11 .15	18.94 .13	34.06 .14	15.70 .10	54.78 1.08
20.5	51.60 .08	84.65 + .47	24.50 .09	45.23 .10	19.06 .10	34.17 .09	15.62 −.03	53.95 − .55
30.5	51.65 + .03	84.42 − .92	24.57 +.06	45.31 +.05	19.15 +.07	34.24 +.06	15.63 +.06	53.68 + .01
Apr. 9.5	51.66 − .01	82.82 2.24	24.61 +.03	45.33 .00	19.20 +.03	34.29 +.02	15.74 .15	53.98 .55
19.4	51.62 .05	79.94 3.47	24.62 .00	45.30 −.04	19.21 .00	34.28 −.02	15.93 .23	54.78 1.06
29.4	51.55 .09	75.88 4.54	24.61 −.03	45.24 .07	19.20 −.02	34.25 .05	16.19 .30	56.09 1.54
May 9.4	51.44 .12	70.85 5.44	24.56 .05	45.15 .10	19.18 .04	34.18 .08	16.53 .38	57.86 1.96
19.4	51.30 − .14	65.00 −6.14	24.50 −.07	45.03 −.13	19.13 −.05	34.10 −.10	16.95 +.44	60.00 +2.32
29.3	51.16 .15	58.57 6.63	24.43 .08	44.88 .15	19.07 .06	33.99 .11	17.40 .48	62.49 2.60
June 8.3	51.00 .16	51.75 6.92	24.35 .09	44.73 .16	19.00 .08	33.87 .12	17.90 .52	65.20 2.79
18.3	50.84 − .16	44.73 −7.01	24.26 −.09	44.56 −.17	18.91 −.09	33.74 −.13	18.45 +.56	68.07 +2.90

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	δ Muscæ.	ε Virginis.	20 Can. Ven.	κ Octantis.	B.A.C. 4536.	m Virginis.	θ Apodis.	π Hydræ.
	160° 59′ h m 12 55	78° 28′ h m 12 56	48° 52′ h m 13 12	175° 15′ h m 13 23	52° 16′ h m 13 30	98° 10′ h m 13 36	166° 17′ h m 13 55	116° 10′ h m 14 0
	s	s	s	s	s	s	s	s
Mar. 0.6	1.64 +.44	55.57 +.20	49.50 +.25	56.09 +1.86	5.70 +.28	4.07 +.22	2.41 + .81	21.03 +.26
10.6	2.03 .35	55.75 .16	49.73 .20	57.78 1.52	5.95 .22	4.28 .19	3.17 .71	21.27 .23
20.6	2.33 .25	55.89 .12	49.91 .15	59.12 1.16	6.14 .17	4.46 .16	3.83 .59	21.50 .20
30.5	2.53 .15	55.99 .08	50.03 .10	60.09 .77	6.28 .12	4.60 .13	4.35 .46	21.68 .17
Apr. 9.5	2.63 +.05	56.06 .05	50.12 .06	60.66 + .38	6.39 .08	4.72 .10	4.74 .33	21.82 .13
19.5	2.64 −.04	56.10 +.02	50.15 +.01	60.86 .00	6.44 +.03	4.80 +.07	5.00 + .20	21.94 +.10
29.4	2.56 .13	56.09 −.01	50.14 −.03	60.67 − .38	6.46 .00	4.85 .04	5.13 + .06	22.03 .07
May 9.4	2.39 .21	56.08 .03	50.09 .06	60.10 .76	6.43 −.04	4.87 +.01	5.12 − .07	22.08 .04
19.4	2.14 .28	56.04 .05	50.01 .09	59.15 1.11	6.38 .07	4.87 −.01	4.99 .20	22.11 +.01
29.4	1.83 .35	55.98 .07	49.91 .12	57.89 1.41	6.30 .10	4.85 .03	4.73 .31	22.11 −.01
June 8.3	1.45 −.42	55.91 −.08	49.77 −.14	56.34 −1.70	6.19 −.12	4.81 −.05	4.36 − .42	22.09 −.04
18.3	1.00 .47	55.83 .09	49.62 .15	54.49 1.95	6.06 .14	4.76 .07	3,87 .52	22.03 .07
28.3	0.51 .48	55.73 .10	49.46 .16	52.45 2.13	5.92 .15	4.68 .08	3.31 .61	21.96 .09
July 8.3	0.04 −.46	55.63 −.10	49.29 −.17	50.24 −2.28	5.76 −.16	4.59 −.09	2.66 − .69	21.86 −.11

Mean Solar Date.	d Bootis.	κ Virginis.	4 Urs. Min.	δ Octantis.	λ Bootis.	λ Virginis.	μ Hydri, S. P.	α Apodis.
	64° 24′ h m 14 5	99° 47′ h m 14 7	11° 57′ h m 14 9	173° 11′ h m 14 9	43° 25′ h m 14 12	102° 53′ h m 14 13	190° 26′ h m 14 33	168° 36′ h m 14 34
	s	s	s	s	s	s	s	s
Mar. 20.6	35.82 +.21	15.96 +.20	23.38 +.59	63.23 +1.22	18.52 +.25	23.89 +.21	51.88 − .82	46.18 +.88
30.6	36.00 .15	16.14 .16	23.88 .41	64.33 .98	18.74 .19	24.08 .17	51.14 .66	46.99 .74
Apr. 9.5	36.12 .11	16.28 .13	24.20 .22	65.19 .72	18.90 .14	24.22 .14	50.55 .49	47.65 .59
19.5	36.22 .08	16.39 .10	24.32 +.03	65.77 .45	19.03 .10	24.35 .11	50.16 .30	48.16 .43
29.5	36.29 .05	16.48 .07	24.27 −.15	66.09 + .18	19.10 +.05	24.44 .08	49.95 − .11	48.51 .27
May 9.5	36.32 +.02	16.53 +.04	24.03 −.32	66.12 − .10	19.12 .00	24.51 +.05	49.93 + .09	48.69 +.11
19.4	36.32 −.01	16.57 +.02	23.62 .48	65.88 .37	19.10 −.04	24.54 +.02	50.13 .29	48.73 −.05
29.4	36.29 .04	16.57 −.01	23.08 .62	65.39 .63	19.04 .08	24.56 .00	50.51 .47	48.59 .22
June 8.4	36.24 .07	16.55 .03	22.39 .74	64.63 .88	18.94 .11	24.54 −.03	51.06 .64	48.30 .38
18.3	36.16 .09	16.51 .05	21.60 .83	63.64 1.09	18.81 .14	24.51 .05	51.80 .81	47.84 .52
28.3	36.07 −.11	16.45 −.07	20.74 −.90	62.46 −1.26	18.65 −.17	24.45 −.07	52.67 + .94	47.27 −.64
July 8.3	35.95 .12	16.37 .09	19.80 .96	61.13 1.41	18.47 .19	24.37 .09	53.67 1.06	46.56 .75
18.3	35.83 .14	16.27 .10	18.82 .95	59.64 1.55	18.28 .20	24.27 .10	54.78 1.14	45.77 .83
28.2	35.68 −.15	16.16 −.11	17.89 −.91	58.04 −1.67	18.07 −.21	24.16 −.11	55.94 +1.18	44.90 −.88

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	33 Bootis.	47 Cephei, S. P.	γ Scorpii.	δ Bootis.	ρ Octantis.	β Cor.Bor.	γ Camelop., S. P.	δ¹ Apodis.
	45° 8′	349° 0′	114° 52′	56° 17′	174° 7′	60° 32′	341° 0′	168° 26′
	14h 34m	14h 51m	14h 57m	15h 11m	15h 18m	15h 23m	15h 39m	16h 4m
	s	s	s	s	s	s	s	s
Mar. 30.6	56.01 +.22	53.12 − .48	53.49 + .22	15.75 +.23	60.89 +1.77	29.34 +.24	7.34 −.40	35.00 +1.11
Apr. 9.6	56.20 .16	52.74 .28	53.70 .19	15.96 .19	62.52 1.49	29.56 .20	7.01 .26	36.05 .99
19.5	56.32 .10	52.56 − .08	53.88 .16	16.12 .15	63.87 1.20	29.74 .16	6.82 −.12	36.99 .86
29.5	56.40 .06	52.59 + .14	54.03 .13	16.25 .11	64.92 .89	29.88 .12	6.76 .00	37.77 .72
May 9.5	56.45 +.02	52.85 .37	54.14 .10	16.35 .07	65.65 .57	29.99 .08	6.82 +.12	38.42 .57
19.5	56.45 −.03	53.34 + .58	54.23 + .07	16.40 +.03	66.07 + .25	30.06 +.05	7.00 +.25	38.90 + .40
29.4	56.39 .07	54.01 .75	54.29 .04	16.42 .00	66.14 − .09	30.10 +.02	7.32 .38	39.22 .23
June 8.4	56.31 .10	54.85 .91	54.31 + .01	16.41 −.03	65.85 .42	30.10 −.02	7.76 .50	39.35 + .05
18.4	56.20 .13	55.83 1.06	54.30 − .02	16.35 .07	65.29 .74	30.06 .05	8.31 .59	39.31 − .13
28.3	56.04 .16	56.97 1.18	54.27 .05	16.27 .10	64.41 1.04	30.00 .08	8.93 .67	39.09 .30
July 8.3	55.86 −.19	58.18 +1.24	54.20 − .08	16.16 −.13	63.22 −1.30	29.91 −.11	9.64 +.74	38.70 − .46
18.3	55.66 .21	59.46 1.30	54.11 .10	16.00 .16	61.81 1.53	29.79 .14	10.41 .78	38.17 .60
28.3	55.44 .22	60.77 1.32	54.00 .13	15.85 .17	60.15 1.73	29.63 .16	11.21 .81	37.51 .72
Aug. 7.2	55.21 .23	62.11 1.32	53.85 .15	15.67 .18	58.38 1.81	29.47 .17	12.04 .83	36.73 .82
17.2	54.98 .22	63.41 1.29	53.71 .15	15.48 .19	56.53 1.85	29.29 .18	12.87 .83	35.87 .88
27.2	54.76 −.21	64.68 +1.25	53.55 − .14	15.29 −.19	54.68 −1.85	29.11 −.17	13.69 +.82	34.97 − .91

Mean Solar Date.	φ Herculis.	σ Cor. Bor. (*mean.*)	γ Apodis.	η Urs.Min.	η Ophiuchi.	π Herculis.	θ Ophiuchi.	δ Aræ.
	44° 47′	55° 52′	168° 39′	14° 0′	105° 36′	53° 4′	114° 54′	150° 36′
	16h 5m	16h 10m	16h 17m	16h 20m	17h 4m	17h 11m	17h 15m	17h 21m
	s	s	s	s	s	s	s	s
Apr. 9.6	27.64 +.26	44.29 + .25	17.75 +1.04	40.75 +.64	19.31 + .30	22.74 +.31	31.39 +.33	34.16 + .57
19.6	27.88 .22	44.52 .21	18.73 .93	41.32 .50	19.59 .27	23.03 .28	31.70 .29	34.70 .51
29.6	28.07 .17	44.71 .17	19.61 .79	41.74 .35	19.84 .24	23.29 .24	31.97 .26	35.18 .46
May 9.6	28.22 .13	44.85 .13	20.31 .63	42.03 .21	20.07 .21	23.50 .20	32.22 .24	35.62 .41
19.5	28.33 .09	44.98 .10	20.87 .47	42.16 +.05	20.27 .19	23.69 .16	32.46 .21	36.00 .36
29.5	28.39 +.04	45.06 + .06	21.25 + .29	42.13 −.10	20.45 + .16	23.83 +.12	32.66 +.18	36.34 + .29
June 8.5	28.40 −.01	45.09 + .02	21.45 + .11	41.95 .25	20.59 .13	23.92 .08	32.81 .14	36.59 .22
18.4	28.37 .06	45.10 − .02	21.47 − .07	41.62 .40	20.70 .09	23.99 +.04	32.95 .11	36.78 .15
28.4	28.28 .11	45.06 .06	21.30 .25	41.15 .53	20.77 .05	24.01 −.01	33.03 .07	36.89 + .08
July 8.4	28.15 .15	44.98 .10	20.96 .42	40.56 .65	20.79 + .01	23.97 .05	33.08 +.03	36.93 .00
18.4	27.99 −.18	44.87 − .13	20.47 − .57	39.85 −.75	20.79 − .03	23.90 −.09	33.08 −.02	36.90 − .08
28.3	27.80 .21	44.72 .16	19.82 .70	39.06 .83	20.74 .07	23.79 .14	33.04 .06	36.77 .16
Aug. 7.3	27.57 .24	44.55 .18	19.07 .81	38.20 .89	20.66 .10	23.62 .18	32.96 .10	36.59 .22
17.3	27.33 .26	44.35 .20	18.20 .90	37.28 .93	20.55 .13	23.43 .20	32.84 .13	36.35 .28
27.3	27.05 .27	44.14 .21	17.28 .94	36.33 .96	20.40 .15	23.22 .22	32.70 .15	36.04 .32
Sept. 6.2	26.79 −.26	43.93 − .22	16.33 − .94	35.36 −.96	20.25 − .16	22.98 −.23	32.54 −.17	35.71 − .34
16.2	26.53 .25	43.71 .22	15.39 .91	34.41 .92	20.08 .17	22.75 .24	32.36 .17	35.37 .35
26.2	26.27 .23	43.50 .22	14.52 .83	33.52 .86	19.92 .15	22.50 .23	32.19 .16	35.02 .33
Oct. 6.1	26.06 −.19	43.27 − .22	13.73 − .73	32.69 −.78	19.78 − .12	22.28 −.21	32.03 −.15	34.70 − .30

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	Groombr. 944,S.P.	ι Herculis.	θ Herculis.	ο Herculis.	λ Sagittarii.	χ Draconis.	ζ Pavonis.	γ Lyræ.
	355° 9′	43° 56′	52° 44′	61° 15′	115° 29′	17° 19′	161° 31′	57° 27′
	h m 17 27	h m 17 36	h m 17 52	h m 18 3	h m 18 21	h m 18 22	h m 18 30	h m 18 55
	s	s	s	s	s	s	s	s
May 19.6	53.19 − .39	30.87 + .21	39.20 +.22	26.53 +.22	28.17 +.26	61.19 +.44	44.61 + .68	0.52 +.27
29.6	53.02 + .05	31.05 .15	39.39 .16	26.73 .18	28.42 .24	61.56 .30	45.25 .60	0.77 .20
June 8.5	53.30 .51	31.16 .10	39.52 .12	26.89 .14	28.65 .21	61.80 .18	45.81 .50	0.98 .19
18.5	54.05 .96	31.24 + .05	39.63 .08	27.00 .10	28.84 .17	61.92 +.06	46.24 .39	1.16 .15
28.5	55.24 1.39	31.26 .00	39.69 +.04	27.09 .06	28.98 .13	61.92 −.07	46.58 .27	1.28 .10
July 8.4	56.83 +1.78	31.23 − .06	39.70 −.01	27.13 +.02	29.10 +.09	61.79 −.20	46.78 + .14	1.36 +.06
18.4	58.80 2.12	31.14 .12	39.66 .06	27.12 −.03	29.16 +.04	61.52 .31	46.86 + .02	1.41 +.02
28.4	61.06 2.42	31.00 .17	39.59 .11	27.07 .07	29.17 −.01	61.15 .43	46.81 − .11	1.40 −.03
Aug. 7.4	63.63 2.68	30.81 .20	39.44 .15	26.98 .12	29.14 .05	60.66 .53	46.63 .23	1.34 .08
17.3	66.42 2.86	30.60 .23	39.28 .18	26.83 .15	29.07 .09	60.10 .61	46.35 .34	1.24 .12
27.3	69.35 +3.01	30.34 − .26	39.09 −.21	26.67 −.17	28.96 −.13	59.43 −.69	45.95 − .44	1.09 −.16
Sept. 6.3	72.43 3.10	30.07 .28	38.86 .23	26.49 .19	28.81 .16	58.71 .75	45.48 .51	0.91 .19
16.3	75.55 3.12	29.77 .29	38.62 .24	26.28 .21	28.65 .17	57.93 .79	44.94 .55	0.71 .21
26.2	78.67 3.09	29.48 .29	38.37 .25	26.07 .21	28.47 .18	57.14 .80	44.38 .57	0.50 .22
Oct. 6.2	81.72 3.01	29.19 .27	38.13 .24	25.86 .20	28.30 .17	56.33 .80	43.80 .57	0.27 .23
16.2	84.69 +2.88	28.93 − .24	37.89 −.23	25.65 −.20	28.13 −.16	55.54 −.78	43.24 − .55	0.05 −.22

Mean Solar Date.	ι Lyræ.	25 Camelop. S. P.	θ Lyræ.	β Cygni.	β Sagittæ.	δ Cygni.	Groombr. 1374,S.P.	ε Pavonis.
	54° 4′	352° 37′	52° 3′	62° 16′	72° 46′	45° 8′	344° 12′	163° 11′
	h m 19 3	h m 19 8	h m 19 12	h m 19 26	h m 19 36	h m 19 41	h m 19 47	h m 19 48
	s	s	s	s	s	s	s	s
May 29.6	33.19 + .25	43.89 − .62	43.21 +.26	28.69 +.26	19.20 +.27	41.52 +.30	30.20 − .35	25.91 +.79
June 8.6	33.42 .21	43.42 .32	43.45 .21	28.93 .22	19.45 .23	41.80 .25	29.91 .23	26.66 .71
18.6	33.61 .16	43.24 − .03	43.64 .16	29.14 .18	19.67 .20	42.03 .20	29.75 − .10	27.33 .62
28.5	33.73 .11	43.35 + .25	43.78 .12	29.30 .14	19.86 .16	42.22 .15	29.72 + .03	27.91 .51
July 8.5	33.83 .07	43.74 .53	43.89 .08	29.42 .10	19.98 .12	42.33 .10	29.82 .16	28.34 .37
18.5	33.87 + .02	44.41 + .81	43.93 +.03	29.50 +.06	20.08 +.08	42.42 +.05	30.05 + .29	28.66 +.24
28.4	33.86 − .03	45.36 1.06	43.94 −.02	29.53 +.01	20.14 +.04	42.43 −.01	30.39 .41	28.82 +.10
Aug. 7.4	33.81 .08	46.52 1.27	43.89 .08	29.52 −.04	20.15 −.01	42.39 .07	30.88 .53	28.86 −.04
17.4	33.71 .13	47.91 1.49	43.78 .13	29.45 .08	20.12 .06	42.30 .12	31.45 .63	28.74 .18
27.4	33.55 .16	49.50 1.68	43.63 .17	29.35 .12	20.04 .10	42.15 .17	32.12 .73	28.50 .31
Sept. 6.3	33.38 − .19	51.27 +1.84	43.45 −.20	29.20 −.16	19.93 −.13	41.96 −.21	32.90 + .82	28.13 −.43
16.3	33.17 .22	53.17 1.95	43.23 .23	29.03 .18	19.78 .15	41.73 .24	33.76 .88	27.65 .51
26.3	32.93 .23	55.16 2.03	43.00 .24	28.84 .19	19.62 .16	41.49 .26	34.67 .94	27.11 .58
Oct. 6.3	32.70 .23	57.23 2.10	42.76 .25	28.64 .20	19.45 .17	41.21 .27	35.64 .99	26.50 .62
16.2	32.47 .23	59.35 2.09	42.51 .24	28.44 .20	19.26 .18	40.94 .28	36.65 1.01	25.86 .64
26.2	32.23 − .21	61.40 +2.05	42.28 −.23	28.25 −.19	19.09 −.16	40.66 −.27	37.65 +1.02	25.22 −.63
Nov. 5.2	32.04 − .18	63.45 +1.98	42.06 −.21	28.07 −.18	18.94 −.14	40.39 −.27	38.68 +1.02	24.61 −.59

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	γ Sagittæ.		cSagittarii.		θ Aquilæ.		31 Cygni.		α Delphini.		β Pavonis.		ψ Capricor.		ε Cygni.	
	70° 48′		118° 0′		91° 8′		43° 35′		74° 28′		156° 35′		115° 39′		56° 26′	
	h m 19 54		h m 19 56		h m 20 5		h m 20 10		h m 20 34		h m 20 35		h m 20 39		h m 20 41	
	s		s		s		s		s		s		s		s	
June 18.6	4.89	+.23	11.50	+.27	52.58	+.22	19.76	+ .24	45.06	+ .24	30.11	+.57	52.02	+.28	57.35	+.27
28.6	5.09	.17	11.75	.23	52.79	.20	19.98	.19	45.29	.21	30.63	.48	52.29	.25	57.60	.23
July 8.6	5.23	.13	11.95	.18	52.98	.16	20.15	.14	45.48	.17	31.06	.39	52.53	.22	57.81	.18
18.5	5.35	.09	12.10	.13	53.11	.12	20.26	.08	45.64	.12	31.41	.30	52.73	.17	57.96	.13
28.5	5.42	+.05	12.22	.08	53.21	.07	20.31	+ .02	45.74	.08	31.67	.20	52.87	.12	58.06	.08
Aug. 7.5	5.44	.00	12.28	+.03	53.26	+.03	20.31	− .03	45.81	+ .05	31.81	+.09	52.97	+.07	58.12	+.03
17.4	5.42	−.04	12.28	−.02	53.27	−.01	20.25	.09	45.84	+ .01	31.84	−.01	53.02	+.03	58.13	−.01
27.4	5.36	.08	12.24	.06	53.24	.05	20.13	.15	45.82	− .04	31.79	.11	53.02	−.01	58.10	.06
Sept. 6.4	5.25	.12	12.16	.10	53.17	.09	19.96	.19	45.76	.08	31.62	.21	52.99	.05	58.01	.11
16.4	5.12	.15	12.04	.13	53.07	.12	19.75	.23	45.67	.12	31.36	.29	52.91	.10	57.88	.14
26.3	4.96	−.17	11.89	−.15	52.93	−.14	19.51	− .25	45.53	− .15	31.04	−.36	52.79	−.13	57.72	−.17
Oct. 6.3	4.78	.18	11.73	.17	52.79	.15	19.24	.27	45.38	.16	30.64	.41	52.64	.15	57.55	.19
16.2	4.61	.18	11.55	.18	52.64	.15	18.97	.28	45.22	.16	30.21	.43	52.48	.16	57.34	.20
26.2	4.43	.17	11.38	.16	52.49	.14	18.69	.27	45.06	.15	29.77	.44	52.32	.16	57.15	.20
Nov. 5.2	4.27	.14	11.22	.14	52.35	.13	18.42	.26	44.90	.14	29.33	.42	52.16	.15	56.95	.20
15.2	4.14	−.11	11.10	−.11	52.23	−.11	18.16	− .24	44.77	− .13	28.92	−.39	52.03	−.13	56.76	−.19
25.2	4.04	−.08	10.99	−.08	52.14	−.08	17.93	− .21	44.64	− .12	28.55	−.35	51.90	−.10	56.58	−.18

Mean Solar Date.	τ Cygni.		ζ Capricor.		74 Cygni.		λ¹ Octantis.		ζ Chamæleontis, S.P.		π² Cygni.		16 Pegasi.		π Pegasi.	
	52° 24′		112° 52′		50° 4′		173° 12′		189° 32′		41° 11′		64° 34′		57° 21′	
	h m 21 10		h m 21 20		h m 21 32		h m 21 34		h m 21 36		h m 21 42		h m 21 48		h m 22 5	
	s		s		s		s		s		s		s		s	
July 8.6	35.92	+.23	40.08	+.25	44.24	+.25	55.19	+1.44	50.16	− .83	54.77	+.28	16.59	+.25	18.92	+.27
18.6	36.12	.17	40.31	.21	44.46	.19	56.49	1.16	49.41	.66	55.02	.22	16.82	.20	19.17	.22
28.5	36.25	.11	40.50	.16	44.62	.14	57.51	.87	48.83	.46	55.21	.15	17.00	.15	19.37	.17
Aug. 7.5	36.35	.06	40.63	.11	44.75	.09	58.23	.55	48.50	.24	55.33	.09	17.13	.11	19.52	.12
17.5	36.38	+.01	40.72	.06	44.80	+.04	58.60	+ .21	48.35	− .02	55.40	+.04	17.23	.07	19.62	.08
27.5	36.37	−.04	40.76	+.02	44.82	−.01	58.65	− .13	48.42	+ .21	55.41	−.01	17.28	+.02	19.69	+.04
Sept. 6.4	36.31	.08	40.76	−.02	44.78	.06	58.35	.47	48.77	.44	55.37	.06	17.27	−.02	19.70	.00
16.4	36.21	.13	40.72	.06	44.70	.11	57.71	.79	49.31	.64	55.28	.12	17.23	.06	19.68	−.04
26.4	36.05	.17	40.64	.10	44.56	.15	56.78	1.07	50.05	.85	55.12	.17	17.16	.09	19.61	.09
Oct. 6.4	35.88	.18	40.53	.12	44.40	.17	55.58	1.31	51.02	1.05	54.92	.20	17.05	.12	19.50	.13
16.3	35.69	−.19	40.40	−.14	44.22	−.19	54.17	−1.49	52.14	+1.20	54.71	−.22	16.92	−.14	19.36	−.15
26.3	35.49	.20	40.24	.15	44.02	.20	52.61	1.62	53.41	1.30	54.48	.24	16.76	.15	19.21	.16
Nov. 5.3	35.28	.21	40.09	.14	43.81	.21	50.93	1.68	54.74	1.35	54.22	.26	16.61	.16	19.05	.17
15.2	35.08	.19	39.96	.13	43.60	.20	49.25	1.66	56.11	1.36	53.96	.26	16.45	.15	18.88	.18
25.2	34.89	.18	39.83	.12	43.41	.20	47.60	1.60	57.48	1.34	53.71	.25	16.31	.13	18.70	.17
Dec. 5.2	34.71	−.17	39.72	−.11	43.21	−.19	46.06	−1.48	58.77	+1.29	53.46	−.25	16.19	−.10	18.55	−.14

APPROXIMATE NORTH POLAR DISTANCES AND APPARENT RIGHT ASCENSIONS, FOR THE UPPER TRANSIT AT WASHINGTON.

Mean Solar Date.	*υ* Octantis.	*γ* Aquarii.	*σ* Aquarii.	*α* Lacertæ.	10 Lacertæ.	*β* Octantis.	*λ* Pegasi.	Groombr. 1706, S. P.
	176° 30′	91° 55′	101° 13′	40° 16′	51° 30′	171° 56′	67° 0′	348° 20′
	h m	h m	h m	h m	h m	h m	h m	h m
	22 11	22 16	22 25	22 26	22 34	22 35	22 41	22 51
	s	s	s	s	s	s	s	s
July 8.6	47.52 +3.05	13.34 +.27	4.81 +.27	57.34 +.33	32.25 +.30	25.24 +1.39	27.57 + .29	29.72 − .06
18.6	50.31 2.54	13.59 .23	5.07 .24	57.65 .28	32.53 .26	26.57 1.26	27.84 .25	29.14 .51
28.6	52.61 2.03	13.80 .19	5.30 .20	57.91 .22	32.77 .22	27.76 1.07	28.08 .21	28.71 .37
Aug. 7.6	54.37 1.47	13.96 .15	5.49 .16	58.11 .16	32.97 .17	28.70 .82	28.27 .16	28.39 .25
17.5	55.54 .85	14.10 .11	5.62 .12	58.23 .10	33.10 .12	29.39 .56	28.41 .12	28.21 − .11
27.5	56.07 + .20	14.19 +.06	5.72 +.08	58.31 +.05	33.20 +.07	29.81 + .28	28.52 + .09	28.18 + .04
Sept. 6.5	55.93 − .47	14.23 +.02	5.78 +.04	58.34 .00	33.24 +.02	29.95 − .01	28.59 + .05	28.30 .20
16.4	55.13 1.10	14.23 −.02	5.80 .00	58.31 −.06	33.23 −.02	29.79 .31	28.61 .00	28.58 .36
26.4	53.73 1.70	14.20 .05	5.78 −.04	58.22 .11	33.19 .06	29.34 .58	28.58 − .04	29.03 .52
Oct. 6.4	51.73 2.26	14.14 .07	5.72 .07	58.09 .15	33.11 .10	28.64 .82	28.53 .07	29.62 .66
16.4	49.22 −2.70	14.06 −.09	5.65 −.09	57.92 −.18	32.99 −.13	27.71 −1.03	28.45 − .09	30.34 + .80
26.3	46.33 3.05	13.96 .11	5.54 .11	57.73 .21	32.85 .16	26.59 1.21	28.35 .11	31.23 .93
Nov. 5.3	43.12 3.29	13.84 .12	5.43 .12	57.50 .23	32.68 .17	25.30 1.34	28.23 .12	32.23 1.05
15.3	39.76 3.38	13.72 .11	5.31 .12	57.26 .24	32.50 .18	23.92 1.41	28.11 .13	33.32 1.15
25.3	36.37 3.34	13.61 .11	5.19 .11	57.02 .24	32.33 .18	22.49 1.42	27.97 .14	34.53 1.22
Dec. 5.2	33.07 −3.18	13.50 −.10	5.08 −.10	56.78 −.23	32.15 −.18	21.09 −1.38	27.84 − .13	35.76 +1.25
15.2	30.01 −2.90	13.41 −.08	4.98 −.09	56.55 −.22	31.97 −.17	19.74 −1.29	27.72 − .12	37.02 +1.25

Mean Solar Date.	*o* Androm.	*φ* Aquarii.	*τ* Pegasi.	*λ* Androm.	*i*^{1} Aquarii.	*δ* Sculptoris.	*γ*^{1} Octantis.	33 Piscium.
	48° 15′	96° 37′	66° 50′	44° 7′	108° 52′	118° 43′	172° 36′	96° 18′
	h m	h m	h m	h m	h m	h m	h m	h m
	22 57	23 8	23 15	23 32	23 38	23 43	23 45	23 59
	s	s	s	s	s	s	s	s
July 28.6	5.01 + .26	52.81 +.24	25.87 +.23	24.87 +.30	45.14 +.26	27.37 + .29	65.08 +1.44	57.16 + .27
Aug. 7.6	5.24 .20	53.03 .20	26.09 .20	25.15 .25	45.40 .24	27.64 .25	66.41 1.25	57.41 .24
17.6	5.41 .15	53.21 .16	26.28 .16	25.38 .20	45.61 .20	27.87 .21	67.57 1.05	57.64 .20
27.5	5.54 .10	53.34 .12	26.41 .12	25.56 .15	45.79 .15	28.06 .17	68.46 .75	57.82 .16
Sept. 6.5	5.62 + .05	53.44 .08	26.51 .08	25.67 .10	45.91 .11	28.20 .12	69.07 .46	57.96 .12
16.5	5.64 .00	53.50 +.04	26.57 +.04	25.75 +.05	46.01 +.07	28.30 + .08	69.38 + .15	58.07 + .09
26.5	5.62 − .04	53.52 .00	26.60 .00	25.78 +.01	46.06 +.03	28.35 + .03	69.38 − .16	58.15 .05
Oct. 6.4	5.56 .08	53.51 −.03	26.58 −.04	25.77 −.03	46.07 −.01	28.37 − .01	69.05 .46	58.18 + .01
16.4	5.46 .12	53.47 .06	26.53 .07	25.71 .07	46.05 .04	28.34 .05	68.44 .74	58.17 − .02
26.4	5.33 .15	53.40 .08	26.45 .09	25.62 .11	46.00 .07	28.27 .08	67.56 1.01	58.15 .04
Nov. 5.3	5.17 − .17	53.31 −.09	26.36 −.10	25.47 −.15	45.92 −.09	28.18 − .10	66.42 −1.26	58.10 − .06
15.3	5.00 .18	53.21 .10	26.25 .11	25.32 .17	45.83 .10	28.08 .11	65.07 1.41	58.03 .08
25.3	4.82 .19	53.11 .11	26.13 .12	25.14 .18	45.72 .11	27.96 .12	63.60 1.52	57.95 .09
Dec. 5.3	4.63 .18	53.00 .10	26.01 .12	24.95 .19	45.61 .12	27.83 .13	62.03 1.59	57.86 .10
15.2	4.45 .18	52.90 .09	25.89 .12	24.76 .20	45.49 .12	27.70 .13	60.42 1.60	57.76 .10
25.2	4.28 − .17	52.81 −.08	25.77 −.11	24.56 −.20	45.38 −.11	27.57 − .12	58.83 −1.55	57.66 − .10
35.2	4.10 − .17	52.74 −.06	25.66 −.10	24.36 −.19	45.28 −.11	27.45 − .11	57.32 −1.44	57.56 − .09

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Jan. 1	18 49 18.63	19.37	−22 58 16.8	15.9	11.033	+12.98	+ 3 58.77	16 18.36	71.04	18 45 19.97
2	18 53 43.31	44.13	22 52 51.0	49.8	11.019	14.13	4 26.88	16 18.35	70.99	18 49 16.53
3	18 58 7.61	8.51	22 46 58.1	56.8	11.003	15.27	4 54.61	16 18.34	70.93	18 53 13.09
4	19 2 31.50	32.48	22 40 38.1	36.5	10.986	16.40	5 21.95	16 18.32	70.88	18 57 9.65
5	19 6 54.98	56.04	22 33 50.9	49.1	10.969	17.52	5 48.88	16 18.30	70.82	19 1 6.21
6	19 11 18.00	19.14	−22 26 37.1	35.0	10.950	+18.64	+ 6 15.35	16 18.27	70.76	19 5 2.77
7	19 15 40.53	41.76	22 18 56.6	54.4	10.928	19.74	6 41.34	16 18.24	70.69	19 8 59.32
8	19 20 2.56	3.84	22 10 49.8	47.3	10.906	20.83	7 6.80	16 18.21	70.62	19 12 55.88
9	19 24 24.04	25.41	22 2 16.8	14.2	10.883	21.92	7 31.73	16 18.17	70.54	19 16 52.44
10	19 28 44.95	46.38	21 53 18.0	15.0	10.859	23.00	7 56.08	16 18.13	70.46	19 20 49.00
11	19 33 5.26	6.74	−21 43 53.8	50.6	10.833	+24.04	+ 8 19.83	16 18.09	70.38	19 24 45.56
12	19 37 24.94	26.50	21 34 4.1	0.6	10.807	25.08	8 42.95	16 18.04	70.30	19 28 42.12
13	19 41 43.96	45.59	21 23 49.6	45.6	10.780	26.12	9 5.43	16 17.99	70.22	19 32 38.67
14	19 46 2.32	4.02	21 13 10.4	6.1	10.751	27.13	9 27.24	16 17.93	70.13	19 36 35.23
15	19 50 19.99	21.75	21 2 6.8	2.1	10.722	28.15	9 48.35	16 17.87	70.03	19 40 31.79
16	19 54 36.96	38.77	−20 50 39.3	34.3	10.692	+29.15	+10 8.76	16 17.80	69.94	19 44 28.35
17	19 58 53.21	55.07	20 38 47.8	42.6	10.661	30.12	10 28.45	16 17.72	69.85	19 48 24.91
18	20 3 8.72	10.63	20 26 33.1	27.4	10.630	31.09	10 47.40	16 17.64	69.75	19 52 21.47
19	20 7 23.48	25.44	20 13 55.4	49.4	10.599	32.04	11 5.60	16 17.56	69.65	19 56 18.02
20	20 11 37.48	39.49	20 0 54.9	48.6	10.567	32.98	11 23.05	16 17.47	69.54	20 0 14.58
21	20 15 50.73	52.78	−19 47 32.1	25.4	10.535	+33.91	+11 39.73	16 17.37	69.44	20 4 11.14
22	20 20 3.21	5.30	19 33 47.2	40.2	10.503	34.82	11 55.64	16 17.27	69.33	20 8 7.70
23	20 24 14.91	17.03	19 19 40.7	33.4	10.471	35.72	12 10.79	16 17.15	69.23	20 12 4.25
24	20 28 25.83	27.98	19 5 12.8	5.2	10.439	36.60	12 25.14	16 17.03	69.12	20 16 0.81
25	20 32 35.96	38.15	18 50 24.0	16.1	10.406	37.46	12 38.72	16 16.91	69.01	20 19 57.37
26	20 36 45.31	47.52	−18 35 14.8	6.6	10.373	+38.31	+12 51.50	16 16.79	68.89	20 23 53.92
27	20 40 53.86	56.11	18 19 45.1	36.4	10.340	39.17	13 3.48	16 16.66	68.78	20 27 50.48
28	20 45 1.61	3.89	18 3 55.5	46.5	10.307	39.96	13 14.68	16 16.52	68.67	20 31 47.04
29	20 49 8.57	10.87	17 47 46.4	37.2	10.273	40.77	13 25.07	16 16.38	68.55	20 35 43.59
30	20 53 14.73	17.04	17 31 18.2	8.8	10.240	41.56	13 34.67	16 16.24	68.44	20 39 40.15
31	20 57 20.09	22.42	−17 14 31.4	21.6	10.207	+42.33	+13 43.45	16 16.09	68.32	20 43 36.71
Feb. 1	21 1 24.64	26.99	16 57 26.1	16.1	10.174	43.09	13 51.44	16 15.93	68.21	20 47 33.27
2	21 5 28.38	30.74	16 39 63.0	52.7	10.140	43.83	13 58.62	16 15.78	68.09	20 51 29.82
3	21 9 31.31	33.68	16 22 22.3	11.8	10.106	44.55	14 4.98	16 15.62	67.98	20 55 26.38
4	21 13 33.43	35.80	16 4 24.6	13.8	10.072	45.26	14 10.54	16 15.45	67.87	20 59 22.94
5	21 17 34.74	37.12	−15 45 70.3	59.4	10.038	+45.93	+14 15.29	16 15.28	67.75	21 3 19.49
6	21 21 35.25	37.63	15 27 39.8	28.5	10.004	46.60	14 19.23	16 15.11	67.63	21 7 16.05
7	21 25 34.92	37.31	15 8 53.5	42.1	9.970	47.24	14 22.35	16 14.94	67.52	21 11 12.60
8	21 29 33.81	36.19	14 49 51.9	40.3	9.937	47.87	14 24.67	16 14.77	67.41	21 15 9.16
9	21 33 31.89	34.27	14 30 35.4	23.6	9.904	48.49	14 26.18	16 14.60	67.30	21 19 5.71
10	21 37 29.17	31.54	−14 10 64.4	52.5	9.870	+49.08	+14 26.90	16 14.42	67.19	21 23 2.27
11	21 41 25.64	28.01	13 51 19.5	7.4	9.837	49.65	14 26.82	16 14.24	67.08	21 26 58.83
12	21 45 21.36	23.72	13 31 21.0	8.8	9.804	50.21	14 25.96	16 14.05	66.97	21 30 55.38
13	21 49 16.29	18.64	13 10 69.4	57.1	9.772	50.75	14 24.33	16 13.87	66.86	21 34 51.94
14	21 53 10.46	12.80	12 50 45.0	32.6	9.741	51.28	14 21.94	16 13.67	66.76	21 38 48.49
15	21 57 3.88	6.19	−12 29 68.3	55.9	9.711	+51.77	+14 18.80	16 13.48	66.65	21 42 45.05
16	22 0 56.55	58.86	−12 9 19.8	7.3	9.681	+52.26	+14 14.92	16 13.28	66.55	21 46 41.60

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.19$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Feb. 16	22 0 56.55	58.86	−12 9 19.8	7.3	9.681	+52.26	+14 14.92	16 13.28	66.55	21 46 41.60
17	22 4 48.52	50.80	11 48 19.8	7.2	9.651	52.74	14 10.33	16 13.07	66.45	21 50 38.16
18	22 8 39.78	42.05	11 26 68.7	56.1	9.622	53.19	14 5.03	16 12.86	66.36	21 54 34.71
19	22 12 30.36	32.60	11 5 46.8	34.2	9.593	53.62	13 59.04	16 12.65	66.26	21 58 31.27
20	22 16 20.27	22.48	10 44 14.6	2.0	9.566	54.06	13 52.38	16 12.43	66.16	22 2 27.82
21	22 20 9.53	11.72	−10 22 32.5	20.0	9.540	+54.45	+13 45.08	16 12.21	66.07	22 6 24.38
22	22 23 58.16	60.31	10 0 40.9	28.4	9.514	54.85	13 37.15	16 11.98	65.98	22 10 20.93
23	22 27 46.18	48.30	9 38 40.2	27.7	9.489	55.23	13 28.61	16 11.75	65.89	22 14 17.49
24	22 31 33.61	35.70	9 16 30.7	18.2	9.465	55.58	13 19.48	16 11.52	65.80	22 18 14.04
25	22 35 20.45	22.51	8 54 12.7	0.4	9.441	55.92	13 9.77	16 11.28	65.72	22 22 10.59
26	22 39 6.75	8.79	− 8 31 46.6	34.5	9.418	+56.25	+12 59.51	16 11.04	65.64	22 26 7.15
27	22 42 52.51	54.51	8 9 13.0	0.9	9.396	56.56	12 48.71	16 10.79	65.56	22 30 3.70
28	22 46 37.75	39.72	7 46 32.1	20.1	9.375	56.86	12 37.40	16 10.55	65.48	22 34 0.26
Mar. 1	22 50 22.54	24.43	7 23 44.4	32.4	9.354	57.13	12 25.58	16 10.30	65.41	22 37 56.81
2	22 54 6.80	8.65	7 0 50.2	38.4	9.334	57.38	12 13.28	16 10.05	65.34	22 41 53.37
3	22 57 50.54	52.40	− 6 37 50.0	38.3	9.315	+57.63	+12 0.51	16 9.80	65.27	22 45 49.92
4	23 1 33.87	35.69	6 14 44.0	32.6	9.296	57.85	11 47.29	16 9.54	65.21	22 49 46.47
5	23 5 16.78	18.56	5 51 32.8	21.5	9.278	58.06	11 33.63	16 9.29	65.14	22 53 43.03
6	23 8 59.26	61.00	5 28 16.8	5.7	9.262	58.26	11 19.56	16 9.03	65.08	22 57 39.58
7	23 12 41.34	43.04	5 4 56.4	45.5	9.246	58.43	11 5.08	16 8.78	65.02	23 1 36.14
8	23 16 23.02	24.68	− 4 41 32.0	21.3	9.230	+58.59	+10 50.21	16 8.52	64.97	23 5 32.69
9	23 20 4.34	5.96	4 17 63.9	53.5	9.215	58.73	10 34.98	16 8.26	64.91	23 9 29.24
10	23 23 45.30	46.87	3 54 32.7	22.5	9.200	58.85	10 19.39	16 8.01	64.86	23 13 25.80
11	23 27 25.92	27.46	3 30 58.9	48.9	9.186	58.96	10 3.45	16 7.75	64.82	23 17 22.35
12	23 31 6.22	7.72	3 7 22.7	13.1	9.173	59.05	9 47.20	16 7.49	64.77	23 21 18.91
13	23 34 46.23	47.68	− 2 43 44.5	35.1	9.161	+59.12	+ 9 30.66	16 7.23	64.73	23 25 15.46
14	23 38 25.94	27.34	2 19 64.6	55.5	9.150	59.18	9 13.82	16 6.97	64.70	23 29 12.01
15	23 42 5.40	6.76	1 56 23.6	14.8	9.139	59.23	8 56.72	16 6.71	64.66	23 33 8.57
16	23 45 44.61	45.93	1 32 41.7	33.1	9.129	59.25	8 39.39	16 6.45	64.63	23 37 5.12
17	23 49 23.61	24.88	1 8 59.3	51.1	9.121	59.27	8 21.83	16 6.18	64.61	23 41 1.67
18	23 53 2.41	3.63	− 0 45 16.8	8.8	9.114	+59.27	+ 8 4.08	16 5.92	64.58	23 44 58.23
19	23 56 41.04	42.22	− 0 21 34.6	26.9	9.107	59.25	7 46.16	16 5.65	64.56	23 48 54.78
20	0 0 19.51	20.65	+ 0 2 7.1	14.6	9.100	59.22	7 28.09	16 5.38	64.54	23 52 51.33
21	0 3 57.87	58.96	0 25 48.0	55.1	9.095	59.18	7 9.90	16 5.11	64.53	23 56 47.89
22	0 7 36.12	37.16	0 49 27.7	34.4	9.092	59.13	6 51.60	16 4.83	64.51	0 0 44.44
23	0 11 14.30	15.29	+ 1 13 5.9	12.3	9.090	+59.05	+ 6 33.23	16 4.56	64.50	0 4 40.99
24	0 14 52.42	53.37	1 36 42.2	48.3	9.088	58.97	6 14.80	16 4.28	64.49	0 8 37.55
25	0 18 30.52	31.41	2 0 16.3	22.1	9.087	58.87	5 56.33	16 4.00	64.49	0 12 34.10
26	0 22 8.59	9.45	2 23 47.8	53.3	9.086	58.75	5 37.87	16 3.72	64.48	0 16 30.66
27	0 25 46.69	47.50	2 47 16.5	21.8	9.088	58.63	5 19.42	16 3.43	64.48	0 20 27.21
28	0 29 24.82	25.58	+ 3 10 42.1	47.0	9.090	+58.49	+ 5 1.00	16 3.15	64.49	0 24 23.76
29	0 33 3.01	3.72	3 34 4.1	8.7	9.093	58.33	4 42.64	16 2.87	64.49	0 28 20.32
30	0 36 41.28	41.94	3 57 22.1	26.4	9.097	58.16	4 24.35	16 2.59	64.50	0 32 16.87
31	0 40 19.64	20.26	4 20 36.0	40.0	9.101	57.98	4 6.16	16 2.30	64.52	0 36 13.43
32	0 43 58.11	58.68	4 43 45.3	48.9	9.106	57.79	3 48.08	16 2.02	64.53	0 40 9.98
33	0 47 36.71	37.24	+ 5 6 49.5	52.9	9.111	+57.57	+ 3 30.13	16 1.74	64.55	0 44 6.53
34	0 51 15.47	15.95	+ 5 29 48.5	51.5	9.118	+57.34	+ 3 12.33	16 1.46	64.57	0 48 3.09

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0^{s}.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Apr. 1	0 43 58.11	58.68	+ 4 43 45.3	48.9	9.106	+57.79	+3 48.08	16 2.02	64.53	0 40 9.98
2	0 47 36.71	37.24	5 6 49.5	52.9	9.111	57.57	3 30.13	16 1.74	64.55	0 44 6.53
3	0 51 15.47	15.95	5 29 48.5	51.5	9.118	57.34	3 12.33	16 1.46	64.57	0 48 3.09
4	0 54 54.37	54.82	5 52 41.6	44.4	9.125	57.09	2 54.70	16 1.18	64.60	0 51 59.64
5	0 58 33.46	33.86	6 15 28.7	31.2	9.133	56.83	2 37.24	16 0.91	64.63	0 55 56.19
6	1 2 12.74	13.10	+ 6 38 9.3	11.5	9.141	+56.55	+2 19.97	16 0.63	64.66	0 59 52.75
7	1 5 52.23	52.55	7 0 43.1	45.0	9.150	56.26	2 2.91	16 0.36	64.69	1 3 49.30
8	1 9 31.95	32.22	7 23 9.9	11.5	9.160	55.95	1 46.06	16 0.09	64.72	1 7 45.86
9	1 13 11.89	12.11	7 45 28.9	30.2	9.170	55.63	1 29.46	15 59.82	64.76	1 11 42.41
10	1 16 52.08	52.27	8 7 40.1	41.1	9.180	55.29	1 13.10	15 59.56	64.80	1 15 38.97
11	1 20 32.54	32.69	+ 8 29 42.9	43.7	9.192	+54.93	+0 57.01	15 59.29	64.84	1 19 35.52
12	1 24 13.28	13.39	8 51 37.1	37.7	9.204	54.57	0 41.20	15 59.03	64.89	1 23 32.07
13	1 27 54.32	54.38	9 13 22.3	22.7	9.217	54.19	0 25.68	15 58.76	64.93	1 27 28.63
14	1 31 35.67	35.69	9 34 58.2	58.4	9.230	53.79	+0 10.48	15 58.50	64.98	1 31 25.18
15	1 35 17.35	17.34	9 56 24.5	24.5	9.244	53.39	−0 4.38	15 58.24	65.04	1 35 21.74
16	1 38 59.38	59.33	+10 17 40.9	40.7	9.259	+52.97	−0 18.91	15 57.98	65.09	1 39 18.29
17	1 42 41.77	41.68	10 38 47.0	46.6	9.274	52.53	0 33.08	15 57.72	65.14	1 43 14.85
18	1 46 24.53	24.41	10 59 42.6	41.9	9.291	52.08	0 46.86	15 57.47	65.20	1 47 11.40
19	1 50 7.70	7.54	11 20 27.2	26.3	9.308	51.62	1 0.25	15 57.21	65.26	1 51 7.96
20	1 53 51.28	51.09	11 40 60.7	59.7	9.325	51.15	1 13.22	15 56.95	65.32	1 55 4.51
21	1 57 35.29	35.06	+12 1 22.8	21.6	9.344	+50.68	−1 25.77	15 56.69	65.39	1 59 1.07
22	2 1 19.75	19.49	12 21 33.0	31.6	9.363	50.18	1 37.86	15 56.43	65.45	2 2 57.62
23	2 5 4.67	4.38	12 41 31.1	29.5	9.382	49.67	1 49.49	15 56.17	65.52	2 6 54.18
24	2 8 50.07	49.75	13 1 16.8	15.2	9.402	49.14	2 0.65	15 55.92	65.59	2 10 50.73
25	2 12 35.97	35.62	13 20 49.8	48.1	9.423	48.60	2 11.30	15 55.67	65.66	2 14 47.29
26	2 16 22.36	21.99	+13 40 9.9	8.0	9.444	+48.05	−2 21.46	15 55.42	65.73	2 18 43.84
27	2 20 9.28	8.88	13 59 16.5	14.6	9.466	47.50	2 31.10	15 55.17	65.80	2 22 40.40
28	2 23 56.72	56.29	14 18 9.6	7.5	9.488	46.92	2 40.22	15 54.92	65.88	2 26 36.95
29	2 27 44.69	44.25	14 36 48.6	46.5	9.511	46.33	2 48.79	15 54.67	65.95	2 30 33.51
30	2 31 33.22	32.76	14 55 13.4	11.1	9.533	45.73	2 56.82	15 54.42	66.03	2 34 30.07
May 1	2 35 22.29	21.81	+15 13 23.3	21.0	9.556	+45.11	−3 4.31	15 54.18	66.11	2 38 26.62
2	2 39 11.92	11.41	15 31 18.3	15.9	9.579	44.47	3 11.24	15 53.94	66.19	2 42 23.18
3	2 43 2.10	1.58	15 48 58.0	55.5	9.602	43.82	3 17.62	15 53.71	66.27	2 46 19.73
4	2 46 52.84	52.30	16 6 22.0	19.5	9.624	43.16	3 23.43	15 53.48	66.35	2 50 16.29
5	2 50 44.15	43.59	16 23 30.0	27.5	9.649	42.49	3 28.68	15 53.25	66.43	2 54 12.85
6	2 54 36.02	35.45	+16 40 21.6	19.1	9.673	+41.80	−3 33.36	15 53.03	66.51	2 58 9.40
7	2 58 28.46	27.87	16 56 56.5	54.0	9.696	41.10	3 37.48	15 52.81	66.59	3 2 5.96
8	3 2 21.46	20.87	17 13 14.4	11.9	9.719	40.38	3 41.04	15 52.60	66.67	3 6 2.51
9	3 6 15.02	14.42	17 29 15.1	12.6	9.743	39.65	3 44.06	15 52.39	66.75	3 9 59.07
10	3 10 9.12	8.52	17 44 58.1	55.6	9.766	38.91	3 46.50	15 52.18	66.83	3 13 55.63
11	3 14 3.81	3.19	+18 0 23.2	20.8	9.789	+38.17	−3 48.38	15 51.98	66.92	3 17 52.19
12	3 17 59.04	58.42	18 15 30.2	27.7	9.813	37.40	3 49.71	15 51.78	67.00	3 21 48.74
13	3 21 54.83	54.20	18 30 18.5	16.2	9.836	36.62	3 50.47	15 51.58	67.08	3 25 45.30
14	3 25 51.17	50.54	18 44 48.1	45.8	9.859	35.83	3 50.70	15 51.38	67.16	3 29 41.86
15	3 29 48.06	47.43	18 58 58.8	56.5	9.882	35.04	3 50.36	15 51.19	67.24	3 33 38.41
16	3 33 45.51	44.87	+19 12 50.2	47.9	9.905	+34.23	−3 49.47	15 51.00	67.32	3 37 34.97
17	3 37 43.51	42.88	+19 26 22.0	19.8	9.928	+33.41	−3 48.03	15 50.81	67.40	3 41 31.53

Note.—For mean time interval of semidiameter passing meridian, subtract $0^s.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
May 17	3 37 43.51	42.88	+19 26 22.0	19.8	9.928	+33.41	−3 48.03	15 50.81	67.40	3 41 31.53
18	3 41 42.06	41.43	19 39 34.0	31.9	9.951	32.58	3 46.04	15 50.63	67.48	3 45 28.08
19	3 45 41.16	40.54	19 52 26.1	24.1	9.974	31.75	3 43.49	15 50.45	67.56	3 49 24.64
20	3 49 40.80	40.19	20 4 57.9	56.0	9.997	30.90	3 40.42	15 50.26	67.64	3 53 21.20
21	3 53 40.99	40.39	20 17 9.2	7.4	10.020	30.03	3 36.78	15 50.08	67.72	3 57 17.76
22	3 57 41.72	41.12	+20 28 59.8	58.0	10.042	+29.16	−3 32.62	15 49.91	67.79	4 1 14.31
23	4 1 42.98	42.40	20 40 29.4	27.7	10.064	28.29	3 27.91	15 49.73	67.86	4 5 10.87
24	4 5 44.78	44.21	20 51 37.8	36.2	10.086	27.41	3 22.68	15 49.56	67.93	4 9 7.43
25	4 9 47.08	46.53	21 2 24.8	23.3	10.107	26.51	3 16.93	15 49.40	68.00	4 13 3.99
26	4 13 49.91	49.37	21 12 50.1	48.7	10.128	25.60	3 10.66	15 49.23	68.07	4 17 0.55
27	4 17 53.23	52.71	+21 22 53.6	52.3	10.148	+24.68	−3 3.89	15 49.07	68.13	4 20 57.10
28	4 21 57.03	56.54	21 32 35.0	33.8	10.168	23.76	2 56.65	15 48.91	68.20	4 24 53.66
29	4 26 1.32	0.85	21 41 54.1	53.0	10.188	22.83	2 48.91	15 48.76	68.26	4 28 50.22
30	4 30 6.07	5.62	21 50 50.7	49.6	10.207	21.89	2 40.72	15 48.61	68.32	4 32 46.78
31	4 34 11.26	10.83	21 59 24.4	23.5	10.225	20.93	2 32.09	15 48.46	68.38	4 36 43.34
June 1	4 38 16.87	16.46	+22 7 35.3	34.5	10.242	+19.97	−2 23.05	15 48.32	68.44	4 40 39.90
2	4 42 22.89	22.50	22 15 23.0	22.2	10.258	19.00	2 13.59	15 48.19	68.49	4 44 36.45
3	4 46 29.28	28.92	22 22 47.4	46.7	10.274	18.03	2 3.75	15 48.06	68.54	4 48 33.01
4	4 50 36.04	35.71	22 29 48.3	47.7	10.289	17.05	1 53.56	15 47.93	68.59	4 52 29.57
5	4 54 43.13	42.83	22 36 25.5	25.0	10.303	16.06	1 43.02	15 47.82	68.64	4 56 26.13
6	4 58 50.54	50.27	+22 42 38.9	38.5	10.315	+15.07	−1 32.16	15 47.71	68.68	5 0 22.69
7	5 2 58.23	58.01	22 48 26.5	28.1	10.326	14.07	1 21.03	15 47.60	68.72	5 4 19.25
8	5 7 6.19	6.00	22 53 54.0	53.7	10.337	13.06	1 9.62	15 47.49	68.76	5 8 15.80
9	5 11 14.41	14.24	22 58 55.2	55.0	10.347	12.05	0 57.96	15 47.39	68.80	5 12 12.36
10	5 15 22.85	22.71	23 3 32.1	31.9	10.356	11.03	0 46.08	15 47.30	68.83	5 16 8.92
11	5 19 31.48	31.37	+23 7 44.7	44.6	10.363	+10.01	−0 34.01	15 47.21	68.86	5 20 5.48
12	5 23 40.30	40.22	23 11 32.8	32.7	10.370	8.99	0 21.75	15 47.12	68.88	5 24 2.04
13	5 27 49.27	49.23	23 14 56.5	56.4	10.377	7.97	−0 9.33	15 47.04	68.90	5 27 58.60
14	5 31 58.37	58.37	23 17 55.6	55.6	10.382	6.95	+0 3.22	15 46.96	68.91	5 31 55.16
15	5 36 7.59	7.64	23 20 30.0	30.0	10.386	5.92	0 15.88	15 46.89	68.93	5 35 51.72
16	5 40 16.92	17.00	+23 22 39.7	39.8	10.390	+ 4.89	+0 28.64	15 46.82	68.95	5 39 48.27
17	5 44 26.32	26.42	23 24 24.8	24.8	10.393	3.86	0 41.48	15 46.75	68.96	5 43 44.83
18	5 48 35.77	35.91	23 25 45.1	45.1	10.395	2.83	0 54.38	15 46.69	68.97	5 47 41.39
19	5 52 45.26	45.43	23 26 40.8	40.8	10.396	1.80	1 7.32	15 46.62	68.98	5 51 37.95
20	5 56 54.77	54.99	23 27 11.6	11.6	10.396	+ 0.77	1 20.27	15 46.56	68.98	5 55 34.51
21	6 1 4.28	4.52	+23 27 17.7	17.7	10.396	− 0.26	+1 33.23	15 46.51	68.97	5 59 31.07
22	6 5 13.78	14.07	23 26 59.0	59.0	10.395	1.29	1 46.16	15 46.45	68.97	6 3 27.63
23	6 9 23.23	23.56	23 26 15.5	15.5	10.392	2.32	1 59.05	15 46.40	68.96	6 7 24.19
24	6 13 32.62	32.99	23 25 7.3	7.2	10.389	3.36	2 11.89	15 46.35	68.95	6 11 20.75
25	6 17 41.91	42.33	23 23 34.4	34.2	10.385	4.39	2 24.64	15 46.31	68.93	6 15 17.30
26	6 21 51.10	51.55	+23 21 36.7	36.4	10.380	− 5.41	+2 37.28	15 46.27	68.91	6 19 13.86
27	6 26 0.16	0.66	23 19 14.4	14.2	10.374	6.44	2 49.78	15 46.24	68.88	6 23 10.42
28	6 30 9.08	9.60	23 16 27.6	27.3	10.367	7.47	3 2.13	15 46.22	68.86	6 27 6.98
29	6 34 17.81	18.37	23 13 16.3	15.8	10.359	8.49	3 14.29	15 46.20	68.83	6 31 3.54
30	6 38 26.34	26.94	23 9 40.3	39.8	10.350	9.51	3 26.27	15 46.18	68.80	6 35 0.10
31	6 42 34.64	35.27	+23 5 40.1	39.5	10.341	−10.52	+3 38.01	15 46.17	68.76	6 38 56.66
32	6 46 42.68	43.35	+23 1 15.5	14.9	10.329	−11.52	+3 49.49	15 46.16	68.72	6 42 53.22

Note.—For mean time interval of semidiameter passing meridian, subtract 0s.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.		Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
		Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
		h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
July	1	6 42 34.64	35.27	+23 5 40.1	39.5	10.341	−10.52	+3 38.01	15 46.17	68.76	6 38 56.66
	2	6 46 42.68	43.35	23 1 15.5	14.9	10.329	11.52	3 49.49	15 46.16	68.72	6 42 53.22
	3	6 50 50.44	51.12	22 56 26.9	26.1	10.317	12.52	4 0.68	15 46.16	68.68	6 46 49.77
	4	6 54 57.89	58.60	22 51 14.3	13.3	10.304	13.52	4 11.58	15 46.16	68.64	6 50 46.33
	5	6 59 5.00	5.74	22 45 37.7	36.5	10.290	14.52	4 22.14	15 46.17	68.60	6 54 42.89
	6	7 3 11.76	12.53	+22 39 37.3	36.1	10.275	−15.51	+4 32.34	15 46.19	68.55	6 58 39.45
	7	7 7 18.15	18.95	22 33 13.3	12.1	10.258	16.49	4 42.17	15 46.22	68.50	7 2 36.01
	8	7 11 24.15	24.97	22 26 26.0	24.6	10.241	17.46	4 51.60	15 46.25	68.44	7 6 32.57
	9	7 15 29.72	30.57	22 19 15.4	13.9	10.223	18.43	5 0.61	15 46.28	68.39	7 10 29.13
	10	7 19 34.84	35.71	22 11 41.8	40.1	10.204	19.38	5 9.19	15 46.32	68.33	7 14 25.69
	11	7 23 39.52	40.41	+22 3 45.3	43.4	10.185	−20.33	+5 17.30	15 46.36	68.27	7 18 22.24
	12	7 27 43.74	44.65	21 55 26.0	24.0	10.165	21.27	5 24.96	15 46 40	68.21	7 22 18.80
	13	7 31 47.47	48.40	21 46 44.3	42.2	10.145	22.20	5 32.13	15 46.45	68.14	7 26 15.36
	14	7 35 50.71	51.65	21 37 40.4	38.2	10.124	23.12	5 38.81	15 46.50	68.07	7 30 11.92
	15	7 39 53.44	54.39	21 28 14.3	11.9	10.103	24.03	5 44.97	15 46.56	68.00	7 34 8.48
	16	7 43 55.65	56.62	+21 18 26.4	24.0	10.081	−24.94	+5 50.63	15 46.62	67.93	7 38 5.03
	17	7 47 57.35	58.33	21 8 16.9	14.3	10.059	25.84	5 55.77	15 46.68	67.86	7 42 1.59
	18	7 51 58.50	59.51	20 57 45.9	43.3	10.037	26.73	6 0.37	15 46.74	67.78	7 45 58.15
	19	7 55 59.13	60.14	20 46 53.7	51.0	10.015	27.61	6 4.44	15 46.81	67.70	7 49 54.71
	20	7 59 59.21	60.23	20 35 40.5	37.7	9.992	28.48	6 7.96	15 46.89	67.61	7 53 51.27
	21	8 3 58.75	59.77	+20 24 6.6	3.6	9.969	−29.34	+6 10.95	15 46.97	67.53	7 57 47.82
	22	8 7 57.73	58.76	20 12 12.0	8.9	9.946	30.19	6 13.36	15 47.05	67.45	8 1 44.38
	23	8 11 56.16	57.19	19 59 57.1	54.0	9.923	31.04	6 15.23	15 47.13	67.37	8 5 40.94
	24	8 15 54.02	55.06	19 47 22.1	18.9	9.899	31.88	6 16.53	15 47.21	67.29	8 9 37.50
	25	8 19 51.33	52.36	19 34 27.4	24.0	9.875	32.69	6 17.27	15 47.30	67.20	8 13 34.05
	26	8 23 48.05	49.09	+19 21 13.0	9.5	9.851	−33.50	+6 17.43	15 47.40	67.12	8 17 30.61
	27	8 27 44.19	45.22	19 7 39.3	35.8	9.827	34.30	6 17.02	15 47.49	67.04	8 21 27.17
	28	8 31 39.74	40.77	18 53 46.5	42.9	9.803	35.09	6 16.02	15 47.59	66.95	8 25 23.73
	29	8 35 34.72	35.74	18 39 35.0	31.3	9.779	35.86	6 14.43	15 47.70	66.86	8 29 20.28
	30	8 39 29.10	30.11	18 25 5.0	1.3	9.754	36.63	6 12.25	15 47.82	66.78	8 33 16.84
	31	8 43 22.89	23.89	+18 10 16.9	13.1	9.729	−37.38	+6 9.47	15 47.94	66.69	8 37 13.40
Aug.	1	8 47 16.07	17.06	17 55 10.8	7.0	9.704	38.12	6 6.09	15 48.06	66.60	8 41 9.97
	2	8 51 8.63	9.59	17 39 47.1	43.3	9.678	38.84	6 2.11	15 48.19	66.52	8 45 6.51
	3	8 55 0.59	1.55	17 24 6.1	2.2	9.653	39.56	5 57.51	15 48.33	66.43	8 49 3.07
	4	8 58 51.96	52.90	17 8 8.1	4.2	9.627	40.27	5 52.30	15 48.46	66.35	8 52 59.62
	5	9 2 42.69	43.62	+16 51 53.5	49.6	9.602	−40.95	+5 46.48	15 48.61	66.26	8 56 56.18
	6	9 6 32.82	33.73	16 35 22.5	18.7	9.576	41.62	5 40.06	15 48.76	66.18	9 0 52.74
	7	9 10 22.34	23.23	16 18 35.6	31.8	9.551	42.28	5 33.02	15 48.91	66.09	9 4 49.29
	8	9 14 11.26	12.11	16 1 33.2	29.4	9 526	42.93	5 25.39	15 49.07	66.01	9 8 45.85
	9	9 17 59.57	60.41	15 44 15.4	11.6	9.501	43.56	5 17.15	15 49.23	65.92	9 12 42.41
	10	9 21 47.29	48.10	+15 26 42.4	38.7	9.476	−44.18	+5 8.31	15 49.40	65.84	9 16 38.96
	11	9 25 34.44	35.22	15 8 54.6	51.0	9.452	44.79	4 58.90	15 49.57	65.76	9 20 35.52
	12	9 29 21.00	21.75	14 50 52.6	49.0	9.428	45.38	4 48.89	15 49.74	65.68	9 24 32.07
	13	9 33 6.99	7.72	14 32 36.4	32.9	9.405	45.96	4 38.33	15 49.92	65.60	9 28 28.63
	14	9 36 52.43	53.12	14 14 6.3	2.9	9.382	46.53	4 27.22	15 50.09	65.52	9 32 25.19
	15	9 40 37.34	38.00	+13 55 22.7	19.4	9.360	−47.09	+4 15.56	15 50.27	65.45	9 36 21.74
	16	9 44 21.71	22.34	+13 36 25.8	22.6	9.339	−47.64	+4 3.38	15 50.45	65.37	9 40 18.30

Note.—For mean time interval of semidiameter passing meridian, subtract 0s.19 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Decli-nation.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Aug. 16	9 44 21.71	22.34	+13 36 25.8	22.6	9.339	−47.64	+4 3.38	15 50.45	65.37	9 40 18.30
17	9 48 5.56	6.17	13 17 16.0	12.9	9.318	48.17	3 50.68	15 50.64	65.30	9 44 14.85
18	9 51 48.92	49.49	12 57 53.5	50.6	9.297	48.70	3 37.48	15 50.82	65.23	9 48 11.41
19	9 55 31.79	32.31	12 38 18.8	16.0	9.276	49.21	3 23.79	15 51.01	65.16	9 52 7.96
20	9 59 14.19	14.68	12 18 31.8	29.2	9.257	49.70	3 9.64	15 51.20	65.09	9 56 4.52
21	10 2 56.13	56.58	+11 58 33.0	30.6	9.239	−50.19	+2 55.04	15 51.39	65.02	10 0 1.07
22	10 6 37.64	38.05	11 38 22.8	20.6	9.221	50.66	2 39.98	15 51.58	64.95	10 3 57.63
23	10 10 18.72	19.09	11 17 61.4	59.4	9.203	51.12	2 24.51	15 51.78	64.89	10 7 54.18
24	10 13 59.39	59.71	10 57 29.2	27.5	9.187	51.56	2 8.62	15 51.98	64.83	10 11 50.74
25	10 17 39.66	39.94	10 36 46.2	44.7	9.171	52.00	1 52.34	15 52.18	64.77	10 15 47.29
26	10 21 19.54	19.79	+10 15 53.1	51.7	9.155	−52.42	+1 35.68	15 52.39	64.71	10 19 43.85
27	10 24 59.05	59.24	9 54 50.2	49.1	9.139	52.82	1 18.63	15 52.60	64.65	10 23 40.40
28	10 28 38.19	38.34	9 33 37.7	36.8	9.124	53.21	1 1.23	15 52.82	64.60	10 27 36.96
29	10 32 16.99	17.11	9 12 15.8	15.2	9.110	53.58	0 43.48	15 53.04	64.55	10 31 33.51
30	10 35 55.46	55.53	8 50 45.1	44.7	9.096	53.94	0 25.40	15 53.26	64.50	10 35 30.07
31	10 39 33.61	33.63	+ 8 29 5.9	5.8	9.083	−54.29	+0 7.00	15 53.49	64.45	10 39 26.62
Sept. 1	10 43 11.44	11.41	8 7 18.4	18.6	9.070	54.64	−0 11.73	15 53.72	64.40	10 43 23.18
2	10 46 48.98	48.91	7 45 23.1	23.6	9.058	54.96	0 30.73	15 53.95	64.36	10 47 19.73
3	10 50 26.24	26.12	7 23 20.4	21.2	9.047	55.26	0 50.02	15 54.19	64.32	10 51 16.29
4	10 54 3.24	3.07	7 1 10.5	11.6	9.036	55.55	1 9.58	15 54.43	64.29	10 55 12.84
5	10 57 39.99	39.77	+ 6 38 53.9	55.3	9.026	−55.83	−1 29.38	15 54.67	64.25	10 59 9.39
6	11 1 16.49	16.22	6 16 30.9	32.6	9.017	56.08	1 49.43	15 54.92	64.22	11 3 5.95
7	11 4 52.79	52.46	5 54 1.7	3.7	9.008	56.33	2 9.69	15 55.17	64.20	11 7 2.50
8	11 8 28.88	28.50	5 31 26.6	29.0	9.001	56.57	2 30.15	15 55.42	64.17	11 10 59.06
9	11 12 4.80	4.37	5 8 46.1	48.8	8.994	56.78	2 50.78	15 55.68	64.15	11 14 55.61
10	11 15 40.56	40.07	+ 4 46 0.7	3.7	8.987	−56.99	−3 11.57	15 55.94	64.13	11 18 52.16
11	11 19 16.17	15.63	4 23 10.4	13.9	8.982	57.19	3 32.51	15 56.19	64.12	11 22 48.72
12	11 22 51.66	51.08	4 0 15.6	19.5	8.977	57.37	3 53.57	15 56.45	64.10	11 26 45.27
13	11 26 27.06	26.43	3 37 16.6	20.8	8.974	57.53	4 14.71	15 56.71	64.09	11 30 41.83
14	11 30 2.39	1.70	3 14 13.7	18.3	8.972	57.69	4 35.93	15 56.97	64.08	11 34 38.38
15	11 33 37.67	36.93	+ 2 51 7.3	12.2	8.970	−57.84	−4 57.19	15 57.23	64.08	11 38 34.93
16	11 37 12.93	12.13	2 27 57.5	62.8	8.969	57.97	5 18.48	15 57.49	64.07	11 42 31.49
17	11 40 48.18	47.33	2 4 44.8	50.4	8.969	58.08	5 39.78	15 57.75	64.07	11 46 28.04
18	11 44 23.46	22.56	1 41 29.5	35.4	8.971	58.19	6 1.05	15 58.01	64.07	11 50 24.59
19	11 47 58.78	57.83	1 18 11.7	17.9	8.974	58.29	6 22.27	15 58.27	64.08	11 54 21.15
20	11 51 34.17	33.16	+ 0 54 51.8	58.4	8.977	−58.36	−6 43.44	15 58.53	64.09	11 58 17.70
21	11 55 9.65	8.58	0 31 30.1	37.0	8.981	58.43	7 4.50	15 58.79	64.10	12 2 14.25
22	11 58 45.24	44.12	+ 0 8 7.1	14.3	8.985	58.48	7 25.46	15 59.05	64.11	12 6 10.81
23	12 2 20.97	19.79	− 0 15 16.8	9.2	8.991	58.51	7 46.28	15 59.32	64.13	12 10 7.36
24	12 5 56.83	55.62	0 38 41.4	33.4	8.998	58.53	8 6.97	15 59.58	64.15	12 14 3.92
25	12 9 32.88	31.61	− 1 1 66.5	58.3	9.006	−58.54	−8 27.47	15 59.85	64.18	12 18 0.47
26	12 13 9.11	7.79	1 25 31.5	23.0	9.014	58.54	8 47.79	16 0.11	64.21	12 21 57.02
27	12 16 45.54	44.17	1 48 56.2	47.4	9.023	58.51	9 7.90	16 0.38	64.24	12 25 53.58
28	12 20 22.21	20.78	2 12 20.1	11.0	9.032	58.47	9 27.80	16 0.66	64.27	12 29 50.13
29	12 23 59.11	57.63	2 35 42.9	33.4	9.043	58.41	9 47.45	16 0.93	64.31	12 33 46.68
30	12 27 36.27	34.75	− 2 58 64.1	54.3	9.054	−58.34	−10 6.83	16 1.21	64.35	12 37 43.24
31	12 31 13.71	12.13	− 3 22 23.4	13.3	9.066	−58.26	−10 25.95	16 1.48	64.39	12 41 39.79

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^{s}.18$ from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Oct. 1	12 31 13.71	12.13	− 3 22 23.4	13.3	9.066	−58.26	−10 25.95	16 1.48	64.39	12 41 39.79
2	12 34 51.43	49.82	3 45 40.5	30.1	9.078	58.15	10 44.77	16 1.76	64.44	12 45 36.35
3	12 38 29.47	27.81	4 8 54.8	44.2	9.091	58.03	11 3.29	16 2.04	64.48	12 49 32.90
4	12 42 7.83	6.12	4 31 66.1	55.0	9.105	57.90	11 21.47	16 2.32	64.53	12 53 29.45
5	12 45 46.54	44.78	4 55 13.9	2.6	9.120	57.75	11 39.32	16 2.61	64.59	12 57 26.01
6	12 49 25.62	23.81	− 5 18 18.0	6.4	9.136	−57.58	−11 56.80	16 2.89	64.65	13 1 22.56
7	12 53 5.07	3.21	5 41 17.9	6.1	9.153	57.40	12 13.91	16 3.17	64.71	13 5 19.11
8	12 56 44.93	43.01	6 4 13.2	1.2	9.170	57.21	12 30.60	16 3.46	64.77	13 9 15.67
9	13 0 25.22	23.26	6 26 63.6	51.5	9.188	56.99	12 46.87	16 3.74	64.83	13 13 12.22
10	13 4 5.94	3.93	6 49 48.7	36.3	9.206	56.77	13 2.71	16 4.02	64.90	13 17 8.78
11	13 7 47.12	45.07	− 7 12 28.3	15.7	9.226	−56.53	−13 18.08	16 4.30	64.98	13 21 5.33
12	13 11 28.79	26.70	7 34 61.9	49.3	9.247	56.27	13 32.97	16 4.58	65.05	13 25 1.89
13	13 15 10.96	8.83	7 57 29.3	16.4	9.269	56.00	13 47.35	16 4.86	65.13	13 28 58.44
14	13 18 53.67	51.50	8 19 50.0	36.9	9.291	55.72	14 1.19	16 5.14	65.21	13 32 54.99
15	13 22 36.92	34.72	8 41 63.7	50.5	9.314	55.41	14 14.49	16 5.41	65.29	13 36 51.55
16	13 26 20.74	18.50	− 9 3 70.0	56.8	9.338	−55.10	−14 27.23	16 5.68	65.37	13 40 48.10
17	13 30 5.16	2.88	9 25 68.6	55.3	9.363	54.78	14 39.36	16 5.95	65.46	13 44 44.66
18	13 33 50.19	47.88	9 47 59.2	45.7	9.389	54.43	14 50.89	16 6.22	65.55	13 48 41.21
19	13 37 35.86	33.51	10 9 41.3	27.8	9.416	54.07	15 1.79	16 6.48	65.64	13 52 37.77
20	13 41 22.18	19.80	10 31 14.6	1.0	9.444	53.69	15 12.02	16 6.75	65.73	13 56 34.32
21	13 45 9.18	6.76	−10 52 38.7	25.1	9.472	−53.30	−15 21.60	16 7.01	65.83	14 0 30.87
22	13 48 56.85	54.40	11 13 53.2	39.5	9.500	52.90	15 30.49	16 7.27	65.92	14 4 27.43
23	13 52 45.22	42.74	11 34 57.6	43.9	9.530	52.47	15 38.69	16 7.53	66.02	14 8 23.98
24	13 56 34.30	31.80	11 55 51.6	37.9	9.560	52.02	15 46.16	16 7.78	66.12	14 12 20.54
25	14 0 24.12	21.58	12 16 34.8	21.3	9.591	51.56	15 52.90	16 8.04	66.22	14 16 17.09
26	14 4 14.68	12.11	−12 36 66.8	53.2	9.622	−51.09	−15 58.91	16 8.30	66.33	14 20 13.65
27	14 8 5.98	3.39	12 57 27.1	13.5	9.653	50.59	16 4.17	16 8.56	66.43	14 24 10.21
28	14 11 58.04	55.43	13 17 35.1	21.6	9.685	50.08	16 8.68	16 8.81	66.54	14 28 6.76
29	14 15 50.87	48.24	13 37 30.6	17.2	9.717	49.54	16 12.41	16 9.06	66.65	14 32 3.32
30	14 19 44.46	41.82	13 56 73.2	59.9	9.750	48.99	16 15.37	16 9.32	66.76	14 35 59.87
31	14 23 38.85	36.19	−14 16 42.4	29.2	9.782	−48.43	−16 17.56	16 9.57	66.88	14 39 56.43
Nov. 1	14 27 34.01	31.35	14 35 57.7	44.7	9.815	47.84	16 18.98	16 9.82	66.99	14 43 52.98
2	14 31 29.97	27.29	14 54 58.7	45.8	9.848	47.24	16 19.56	16 10.07	67.10	14 47 49.54
3	14 35 26.73	24.04	15 13 45.0	32.3	9.881	46.62	16 19.37	16 10.32	67.22	14 51 46.09
4	14 39 24.29	21.59	15 32 16.4	3.8	9.914	45.98	16 18.38	16 10.57	67.34	14 55 42.65
5	14 43 22.65	19.95	−15 50 32.1	19.8	9.948	−45.33	−16 16.58	16 10.82	67.46	14 59 39.21
6	14 47 21.83	19.13	16 8 32.0	19.9	9.982	44.65	16 13.96	16 11.07	67.58	15 3 35.76
7	14 51 21.84	19.13	16 26 15.5	3.6	10.017	43.96	16 10.53	16 11.31	67.70	15 7 32.32
8	14 55 22.66	19.96	16 43 42.2	30.7	10.051	43.26	16 6.28	16 11.55	67.82	15 11 28.87
9	14 59 24.32	21.62	17 0 52.0	40.6	10.086	42.54	16 1.19	16 11.78	67.94	15 15 25.43
10	15 3 26.79	24.10	−17 17 44.3	33.2	10.121	−41.81	−15 55.27	16 12.01	68.06	15 19 21.99
11	15 7 30.12	27.44	17 34 18.8	8.0	10.156	41.06	15 48.50	16 12.24	68.18	15 23 18.54
12	15 11 34.29	31.62	17 50 35.2	24.6	10.191	40.29	15 40.90	16 12.46	68.30	15 27 15.10
13	15 15 39.30	36.65	18 6 32.9	22.6	10.226	39.51	15 32.45	16 12.68	68.42	15 31 11.66
14	15 19 45.16	42.52	18 22 11.6	1.7	10.262	38.71	15 23.16	16 12.89	68.53	15 35 8.21
15	15 23 51.87	49.25	−18 37 31.0	21.4	10.297	−37.89	−15 13.01	16 13.10	68.65	15 39 4.77
16	15 27 59.45	56.85	−18 52 30.8	21.5	10.333	−37.07	−15 2.00	16 13.30	68.76	15 43 1.33

NOTE.—For mean time interval of semidiameter passing meridian, subtract 0^{s}.18 from the sidereal interval.

FOR WASHINGTON MEAN AND APPARENT NOON.

Date.	Apparent Right Ascension.		Apparent Declination.		Hourly Motion.		Equation of Time for Apparent Noon.	Semi-diameter at Apparent Noon.	Sidereal Time of Semid. Passing Merid.	Sidereal Time of Mean Noon.
	Mean Noon.	App. Noon.	Mean Noon.	App. Noon.	Right Ascen.	Declination.				
	h m s	s	° ′ ″	″	s	″	m s	′ ″	s	h m s
Nov. 16	15 27 59.45	56.85	−18 52 30.8	21.5	10.333	−37.07	−15 2.00	16 13.30	68.76	15 43 1.33
17	15 32 7.86	5.29	19 7 10.5	1.5	10.368	36.23	14 50.15	16 13.50	68.88	15 46 57.89
18	15 36 17.13	14.58	19 21 29.7	21.0	10.403	35.36	14 37.45	16 13.70	68.99	15 50 54.44
19	15 40 27.23	24.72	19 35 28.0	19.7	10.438	34.49	14 23.91	16 13.89	69.10	15 54 51.00
20	15 44 38.18	35.71	19 48 65.1	57.2	10.473	33.60	14 9.52	16 14.08	69.21	15 58 47.56
21	15 48 49.96	47.53	−20 2 20.7	13.0	10.507	−32.69	−13 54.32	16 14.27	69.32	16 2 44.12
22	15 53 2.54	0.15	20 15 14.2	7.0	10.541	31.77	13 38.29	16 14.45	69.43	16 6 40.67
23	15 57 15.94	13.58	20 27 45.6	38.7	10.574	30.83	13 21.45	16 14.63	69.53	16 10 37.23
24	16 1 30.12	27.82	20 39 54.2	47.6	10.607	29.87	13 3.83	16 14.80	69.64	16 14 33.79
25	16 5 45.08	42.82	20 51 39.7	33.5	10.639	28.91	12 45.43	16 14.98	69.75	16 18 30.35
26	16 9 60.80	58.58	−21 2 61.8	56.0	10.670	−27.93	−12 26.28	16 15.15	69.85	16 22 26.91
27	16 14 17.25	15.09	21 13 60.0	54.7	10.700	26.92	12 6.39	16 15.31	69.95	16 26 23.46
28	16 18 34.42	32.31	21 24 34.4	29.3	10.729	25.91	11 45.78	16 15.47	70.04	16 30 20.02
29	16 22 52.27	50.22	21 34 44.2	39.4	10.758	24.89	11 24.47	16 15.63	70.14	16 34 16.58
30	16 27 10.78	8.80	21 44 29.3	24.9	10.785	23.86	11 2.51	16 15.79	70.23	16 38 13.14
Dec. 1	16 31 29.96	28.04	−21 53 49.5	45.4	10.811	−22.81	−10 39.91	16 15.95	70.31	16 42 9.69
2	16 35 49.74	47.89	22 2 44.3	40.5	10.836	21.75	10 16.68	16 16.10	70.40	16 46 6.25
3	16 40 10.11	8.33	22 11 13.4	10.1	10.861	20.68	9 52.85	16 16.25	70.48	16 50 2.81
4	16 44 31.06	29.34	22 19 16.8	13.7	10.884	19.60	9 28.47	16 16.40	70.55	16 53 59.37
5	16 48 52.54	50.90	22 26 54.1	51.3	10.905	18.50	9 3.54	16 16.54	70.62	16 57 55.93
6	16 53 14.54	12.97	−22 34 5.2	2.6	10.926	−17.40	− 8 38.09	16 16.68	70.69	17 1 52.49
7	16 57 37.04	35.54	22 40 49.7	47.4	10.947	16.30	8 12.16	16 16.81	70.76	17 5 49.05
8	17 1 60.00	58.57	22 47 7.6	5.6	10.966	15.19	7 45.75	16 16.94	70.83	17 9 45.61
9	17 6 23.39	22.04	22 52 58.6	56.8	10.983	14.06	7 18.91	16 17.06	70.89	17 13 42.16
10	17 10 47.19	45.93	22 58 22.4	20.8	10.999	12.93	6 51.66	16 17.17	70.94	17 17 38.72
11	17 15 11.38	10.21	−23 3 19.0	17.8	11.015	−11.79	− 6 24.02	16 17.28	70.99	17 21 35.28
12	17 19 35.94	34.85	23 7 48.3	47.3	11.030	10.64	5 56.02	16 17.38	71.04	17 25 31.84
13	17 23 60.83	59.82	23 11 50.0	49.1	11.043	9.49	5 27.68	16 17.48	71.09	17 29 28.40
14	17 28 26.02	25.10	23 15 24.1	23.4	11.055	8.34	4 59.04	16 17.57	71.13	17 33 24.96
15	17 32 51.49	50.67	23 18 30.3	29.8	11.066	7.18	4 30.11	16 17.66	71.16	17 37 21.52
16	17 37 17.22	16.49	−23 21 8.7	8.3	11.076	− 6.02	− 4 0.93	16 17.73	71.19	17 41 18.08
17	17 41 43.16	42.52	23 23 19.1	18.7	11.084	4.85	3 31.53	16 17.80	71.21	17 45 14.64
18	17 46 9.30	8.74	23 25 1.4	1.2	11.091	3.68	3 1.94	16 17.87	71.23	17 49 11.19
19	17 50 35.59	35.11	23 26 15.5	15.4	11.098	2.50	2 32.20	16 17.93	71.25	17 53 7.75
20	17 55 2.02	1.63	23 27 1.3	1.3	11.103	1.33	2 2.34	16 17.99	71.26	17 57 4.31
21	17 59 28.53	28.25	−23 27 18.9	18.9	11.105	− 0.15	− 1 32.38	16 18.04	71.26	18 1 0.87
22	18 3 55.09	54.91	23 27 8.3	8.3	11.107	+ 1.03	1 2.35	16 18.09	71.27	18 4 57.43
23	18 8 21.67	21.59	23 26 29.3	29.3	11.107	2.21	0 32.31	16 18.14	71.27	18 8 53.99
24	18 12 48.24	48.24	23 25 21.9	21.9	11.105	3.39	− 0 2.30	16 18.18	71.26	18 12 50.55
25	18 17 14.75	14.84	23 23 46.2	46.2	11.102	4.57	+ 0 27.67	16 18.21	71.25	18 16 47.11
26	18 21 41.15	41.35	−23 21 42.3	42.3	11.098	+ 5.75	+ 0 57.53	16 18.24	71.23	18 20 43.67
27	18 26 7.43	7.72	23 19 10.2	10.1	11.091	6.93	1 27.25	16 18.27	71.21	18 24 40.23
28	18 30 33.54	33.92	23 16 10.0	9.7	11.083	8.10	1 56.81	16 18.29	71.18	18 28 36.79
29	18 34 59.44	59.90	23 12 41.7	41.3	11.074	9.96	2 26.16	16 18.31	71.15	18 32 33.34
30	18 39 25.10	25.64	23 8 45.4	44.9	11.062	10.42	2 55.26	16 18.33	71.12	18 36 29.90
31	18 43 50.44	51.09	−23 4 21.4	20.8	11.050	+11.58	+ 3 24.07	16 18.34	71.08	18 40 26.46
32	18 48 15.50	16.23	−22 59 29.6	28.8	11.038	+12.73	+ 3 52.57	16 18.35	71.04	18 44 23.02

NOTE.—For mean time interval of semidiameter passing meridian, subtract $0^s.19$ from the sidereal interval.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Jan. 1	20 29.15	1.919	15 17 51.13	126.40	−21 22 57.0	−602.8	66.15	14 51.0	54 23.0	II. S.
2	21 16.34	2.015	16 9 6.74	131.09	−24 53 2.5	−442.1	67.40	14 46.4	54 6.4	II. S.
3	22 5.78	2.100	17 2 37.52	136.18	−27 13 39.7	−256.3	68.78	14 44.0	53 57.7	II. N.
4	22 56.82	2.145	17 57 44.93	138.94	−28 15 20.8	− 50.1	69.44	14 43.5	53 55.6	II. N.
5	23 48.31	2.136	18 53 19.57	138.37	−27 53 1.8	+161.2	69.28	14 44.6	53 59.3	II. N.
7	0 38.95	2.076	19 48 2.60	134.76	−26 7 46.7	+361.8	68.25	14 46.9	54 8.5	I. N.
8	1 27.70	1.984	20 40 52.39	129.25	−23 6 36.3	539.1	66.89	14 50.9	54 22.9	I. N. S.
9	2 14.13	1.886	21 31 21.98	123.34	−19 0 35.2	685.6	65.36	14 56.3	54 42.4	I. S.
10	2 58.37	1.804	22 19 40.72	118.48	−14 2 29.4	799.4	64.10	15 3.0	55 7.4	I. S.
11	3 41.09	1.760	23 6 27.02	115.77	− 8 25 11.9	881.8	63.39	15 11.4	55 38.3	I. S.
12	4 23.23	1.760	23 52 39.20	115.74	− 2 21 8.0	+933.3	63.46	15 21.5	56 15.4	I. S.
13	5 6.02	1.815	0 39 29.87	119.06	+ 3 57 4.1	951.9	64.41	15 33.1	56 58.3	I. S.
14	5 50.83	1.930	1 28 22.62	125.90	10 15 11.8	931.3	66.35	15 46.3	57 46.5	I. S.
15	6 39.18	2.106	2 20 48.27	136.62	16 15 21.0	859.4	69.12	16 0.3	58 37.6	I. S.
16	7 32.51	2.343	3 18 13.43	150.87	21 33 41.0	707.5	72.69	16 14.1	59 28.6	I. S.
17	8 31.71	2.587	4 21 31.45	165.48	+25 39 55.3	+496.5	76.32	16 26.6	60 14.5	I. S.
18	9 36.28	2.773	5 30 12.70	176.71	28 0 1.3	+192.3	78.91	16 36.2	60 49.8	I. N.
19	10 43.74	2.815	6 41 48.01	179.47	28 7 30.7	−157.4	79.45	16 41.3	61 8.3	I. N.
20	11 50.24	2.699	7 52 26.31	172.31	25 56 27.3	−489.3	77.74	16 40.9	61 7.1	I. N.
21	12 52.52	2.480	8 58 49.37	159.01	21 45 53.3	−748.5	74.58	16 35.0	60 45.4	II. N. S.
22	13 49.15	2.244	9 59 33.13	144.72	+16 10 24.2	−913.1	71.06	16 24.3	60 5.9	II. S.
23	14 40.50	2.046	10 54 58.89	133.09	9 46 42.6	−992.2	68.05	16 10.1	59 12.9	II. S.
24	15 27.81	1.904	11 46 21.98	124.67	+ 3 5 39.2	−1003.6	65.92	15 54.1	58 14.9	II. S.
25	16 12.59	1.834	12 35 12.66	120.16	− 3 29 34.9	−965.7	64.71	15 37.6	57 14.6	II. S.
26	16 56.27	1.815	13 22 57.12	119.06	− 9 42 3.6	−891.4	64.47	15 22.8	56 20.2	II. S.
27	17 40.11	1.843	14 10 51.07	120.85	−15 18 46.2	−787.6	64.99	15 9.8	55 32.4	II. S.
28	18 25.07	1.910	14 59 54.98	124.75	−20 8 33.2	−657.2	66.07	14 59.4	54 54.0	II. S.
29	19 11.96	1.994	15 50 50.19	129.82	−24 0 49.2	−500.0	67.41	14 51.7	54 26.0	II. S.
30	20 0.88	2.078	16 43 50.03	134.89	−26 45 11.5	−317.8	68.70	14 47.1	54 8.7	II. S.
31	20 51.52	2.135	17 38 33.83	138.30	−28 12 30.2	−115.9	69.53	14 45.1	54 1.3	II. N.
Feb. 1	21 43.01	2.146	18 34 7.94	138.96	−28 16 38.3	+ 95.6	69.61	14 45.4	54 2.8	II. N.
2	22 34.13	2.106	19 29 20.18	136.63	−26 56 28.8	300.0	68.91	14 47.8	54 11.6	II. N.
3	23 23.79	2.027	20 23 4.33	131.80	−24 16 36.9	492.0	67.61	14 51.9	54 26.6	II. N.
5	0 11.32	1.934	21 14 40.82	126.09	−20 26 29.6	653.1	66.07	14 57.3	54 46.5	II. N.
6	0 56.65	1.847	22 4 4.10	120.97	−15 38 33.9	780 5	64.66	15 3.8	55 10.2	I. N. S.
7	1 40.18	1.786	22 51 39.73	117.39	−10 6 29.5	+873.7	63.70	15 10.9	55 36.6	I. S.
8	2 22.71	1.765	23 38 15.06	115.90	− 4 4 14.5	931.7	63.40	15 18.9	56 5.5	I. S.
9	3 5.27	1.790	0 24 52.48	117.58	+ 2 14 4.7	953.7	63.89	15 27.4	56 37.0	I. S.
10	3 49.09	1.870	1 12 45.17	122.38	8 33 34.0	936.7	65.29	15 36.6	57 10.8	I. S.
11	4 35.49	2.006	2 3 13.22	130.52	14 37 20.2	877.4	67.56	15 46.3	57 46.2	I. S.
12	5 25.79	2.194	2 57 36.30	141.81	+20 5 1.6	+754.6	70.55	15 56.3	58 23.3	I. S.
13	6 21.02	2.411	3 56 55.76	154.90	24 31 44.4	567.1	73.86	16 6.4	59 0.1	I. S.
14	7 21.34	2.600	5 1 21.20	166.26	27 29 6.4	+308.3	76.70	16 15.5	59 33.9	I. S.
15	8 25.42	2.712	6 9 33.45	173.09	28 30 58.5	− 5.0	78.17	16 23.1	60 1.3	I. N.
16	9 30.48	2.683	7 18 43.98	171.38	+27 22 46.0	−333.5	77.69	16 27.8	60 18.6	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Feb. 16	9 30.48	2.683	7 18 43.98	171.38	+27 22 46.0	−333.5	77.69	16 27.8	60 18.6	I. N.
17	10 33.33	2.538	8 25 41.71	162.60	24 9 34.0	−622.3	75.50	16 28.7	60 22.2	I. N.
18	11 31.86	2.338	9 28 20.04	150.55	19 14 33.4	−838.5	72.49	16 25.5	60 10.2	I. N.
19	12 25.59	2.146	10 26 9.38	138.97	13 10 4.9	−970.5	69.54	16 18.1	59 43.0	II. N.
20	13 15.21	1.999	11 19 51.22	130.01	+ 6 28 42.9	−1024.9	67.23	16 7.2	59 2.9	II. S.
21	14 1.96	1.906	12 10 39.56	124.49	− 0 21 28.1	−1016.7	65.79	15 53.9	58 14.1	II. S.
22	14 47.14	1.868	12 59 54.96	122.25	− 6 58 3.7	−959.0	65.25	15 39.5	57 21.4	II. S.
23	15 32.03	1.879	13 48 52.06	122.89	−13 3 30.9	−862.4	65.48	15 25.3	56 28.8	II. S.
24	16 17.64	1.927	14 38 33.28	125.77	−18 23 42.0	−733.6	66.35	15 12.5	55 42.4	II. S.
25	17 4.74	2.000	15 29 43.46	130.20	−22 46 36.0	−576.6	67.59	15 2.2	55 3.4	II. S.
26	17 53.66	2.075	16 22 42.98	134.71	−26 1 36.3	−394.8	68.80	14 54.0	54 34.2	II. S.
27	18 44.21	2.132	17 17 21.25	138.12	−27 59 46.6	−193.6	69.70	14 49.0	54 15.9	II. S.
28	19 35.72	2.151	18 12 56.32	139.28	−28 34 55.8	+ 18.6	69.95	14 47.1	54 9.0	II. N.
Mar. 1	20 27.12	2.123	19 8 25.34	137.67	−27 44 4.6	228.8	69.44	14 48.1	54 12.6	II. N.
2	21 17.36	2.058	20 2 44.98	133.68	−25 33 9.2	427.7	68.33	14 51.7	54 25.8	II. N.
3	22 5.74	1.972	20 55 12.05	128.47	−22 6 36.2	+601.2	66.88	14 57.4	54 46.6	II. N.
4	22 52.03	1.888	21 45 33.74	123.46	−17 36 6.0	746.0	65.44	15 4.7	55 13.6	II. N.
5	23 36.52	1.825	22 34 7.17	119.63	−12 14 14.0	857.5	64.36	15 13.1	55 44.3	II. N.
7	0 19.88	1.795	23 21 32.20	117.83	− 6 14 44.5	933.6	63.85	15 21.8	56 16.7	I. N.
8	1 3.02	1.810	0 8 44.74	118.69	+ 0 7 37.2	971.4	64.09	15 30.7	56 49.2	I. S.
9	1 47.08	1.871	0 56 51.49	122.38	+ 6 36 43.9	+966.5	65.17	15 39.0	57 20.3	I. S.
10	2 33.24	1.985	1 47 5.27	129.24	12 54 23.9	913.0	67.09	15 47.0	57 49.0	I. S.
11	3 22.72	2.146	2 40 38.61	138.90	18 39 37.8	803.1	69.71	15 54.0	58 14.9	I. S.
12	4 16.46	2.336	3 38 28.88	150.41	23 28 13.7	629.0	72.70	16 0.2	58 37.9	I. S.
13	5 14.75	2.514	4 40 51.92	161.24	26 53 57.6	389.8	75.43	16 5.7	58 57.7	I. S.
14	6 16.63	2.624	5 46 51.71	167.88	+28 32 34.9	+ 97.7	77.04	16 10.0	59 13.3	I. N. S.
15	7 19.88	2.623	6 54 13.85	167.71	28 9 5.0	−214.8	77.01	16 13.0	59 24.7	I. N.
16	8 21.73	2.514	8 0 11.42	161.09	25 43 55.2	−504.2	75.31	16 14.4	59 29.6	I. N.
17	9 20.06	2.342	9 2 37.55	150.74	21 33 13.3	−736.9	72.72	16 13.7	59 26.7	I. N.
18	10 14.11	2.164	10 0 45.66	140.05	16 2 51.6	−901.4	69.92	16 10.3	59 14.8	I. N.
19	11 4.25	2.021	10 54 58.89	131.48	+ 9 41 25.2	−994.3	67.60	16 4.4	58 53.1	I. N.
20	11 51.51	1.926	11 46 18.87	125.71	+ 2 55 51.9	−1023.5	66.05	15 56.1	58 22.6	I. N.
21	12 37.12	1.884	12 35 59.73	123.16	− 3 50 4.9	−997.4	65.36	15 45.9	57 44.9	II. S.
22	13 22.30	1.888	13 25 14.35	123.47	−10 16 3.6	−924.9	65.48	15 34.5	57 3.1	II. S.
23	14 8.09	1.933	14 15 5.69	126.09	−16 4 35.6	−811.5	66.26	15 22.8	56 20.0	II. S.
24	14 55.28	2.002	15 6 21.02	130.32	−21 0 32.6	−662.8	67.46	15 11.7	55 39.4	II. S.
25	15 44.25	2.078	15 59 24.43	134.89	−24 50 51.8	−484.2	68.76	15 2.2	55 4.3	II. S.
26	16 34.93	2.137	16 54 9.76	138.56	−27 24 56.7	−283.3	69.79	14 54.8	54 37.2	II. S.
27	17 26.66	2.163	17 49 58.76	140.05	−28 35 35.0	− 73.6	70.20	14 50.1	54 20.0	II. S.
28	18 18.43	2.142	18 45 50.13	138.75	−28 20 6.6	+145.2	69.89	14 48.5	54 13.8	II. N.
29	19 9.17	2.080	19 40 39.19	134.96	−26 40 50.0	+347.7	68.87	14 49.7	54 18.7	II. N.
30	19 58.09	1.996	20 33 39.12	129.88	−23 44 21.4	530.2	67.46	14 54.1	54 34.5	II. N.
31	20 44.92	1.909	21 24 33.10	124.75	−19 40 8.6	685.9	66.00	15 1.2	55 0.4	II. N.
Apr. 1	21 29.88	1.842	22 13 34.73	120.72	−14 39 11.7	813.1	64.82	15 10.2	55 33.9	II. N.
2	22 13.60	1.806	23 1 21.63	118.61	− 8 53 27.6	+909 8	64.18	15 20.8	56 12.6	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Apr. 2	22 13.60	1.806	23 1 21.63	118.61	− 8 53 27.6	+909.8	64.18	15 20.8	56 12.6	II. N.
3	22 56.98	1.814	23 48 48.31	119.06	− 2 36 4.4	970.5	64.25	15 32.0	56 54.1	II. N.
4	23 41.13	1.872	0 37 0.67	122.51	+ 3 57 53.0	991.3	65.16	15 43.1	57 34.6	II. N.
6	0 27.25	1.980	1 27 12.01	128.96	10 30 19.4	961.9	66.93	15 53.0	58 11.3	I. S.
7	1 16.58	2.139	2 20 36.45	138.50	16 39 16.4	871.5	69.47	16 1.4	58 42.1	I. S.
8	2 10.13	2.329	3 18 15.28	149.89	+21 58 38.1	+713.7	72.44	16 7.5	59 4.0	I. S.
9	3 8.29	2.510	4 20 30.62	160.84	25 59 42.1	481.3	75.26	16 11.2	59 18.7	I. S.
10	4 10.22	2.631	5 26 33.03	168.24	28 15 45.3	+191.2	77.06	16 12.7	59 23.3	I. S.
11	5 13.72	2.639	6 34 10.32	168.62	28 29 38.2	−122.1	77.20	16 12.3	59 21.9	I. N.
12	6 15.94	2.529	7 40 30.08	162.01	26 40 19.2	−417.5	75.64	16 10.2	59 13.8	I. N.
13	7 14.59	2.350	8 43 15.47	151.31	+23 2 52.8	−658.8	72.97	16 6.9	59 1.3	I. N.
14	8 8.77	2.167	9 41 31.78	140.12	18 1 56.9	−833.9	70.11	16 2.3	58 44.8	I. N.
15	8 58.80	2.012	10 35 38.54	130.85	12 4 18.5	−943.6	67.58	15 56.6	58 23.9	I. N.
16	9 45.71	1.907	11 26 37.35	124.56	+ 5 34 46.8	−994.8	65.82	15 49.8	57 59.2	I. N.
17	10 30.77	1.857	12 15 44.53	121.59	− 1 4 46.2	−994.9	64.94	15 42.1	57 30.9	I. N.
18	11 15.23	1.855	13 4 16.14	121.55	− 7 34 57.0	−948.9	64.90	15 33.5	56 59.4	I. N.
19	12 0.23	1.895	13 53 20.03	123.82	−13 38 4.8	−860.3	65.60	15 24.5	56 26.0	II. S.
20	12 46.66	1.973	14 43 49.93	128.53	−18 57 39.8	−731.3	66.81	15 15.2	55 52.5	II. S.
21	13 35.05	2.059	15 36 17.97	133.68	−23 18 25.4	−566.3	68.25	15 6.6	55 20.3	II. S.
22	14 25.43	2.134	16 30 45.81	138.25	−26 27 4.2	−372.8	69.50	14 58.9	54 52.2	II. S.
23	15 17.24	2.174	17 26 39.45	140.70	−28 13 42.9	−158.3	70.21	14 53.0	54 30.3	II. S.
24	16 9.42	2.164	18 22 55.27	140.05	−28 33 33.4	+ 58.7	70.10	14 49.1	54 15.3	II. N. S.
25	17 0.75	2.105	19 18 19.86	136.50	−27 27 42.1	267.7	69.25	14 47.9	54 12.1	II. N.
26	17 50.25	2.016	20 11 54.66	131.16	−25 2 23.4	455.2	67.82	14 49.7	54 18.4	II. N.
27	18 37.48	1.920	21 3 12.86	125.39	−21 27 7.9	616.7	66.30	14 54.4	54 35.6	II. N.
28	19 22.58	1.840	21 52 21.98	120.59	−16 52 41.0	+750.7	64.94	15 2.0	55 3.6	II. N.
29	20 6.09	1.793	22 39 57.09	117.71	−11 29 56.8	858.0	64.10	15 12.3	55 41.2	II. N.
30	20 48.95	1.787	23 26 52.51	117.39	− 5 30 2.7	936.1	63.94	15 24.5	56 26.3	II. N.
May 1	21 32.28	1.832	0 14 15.83	120.07	+ 0 54 44.8	981.2	64.62	15 38.0	57 15.7	II. N.
2	22 17.35	1.934	1 3 24.14	126.11	7 29 25.4	983.6	66.22	15 51.6	58 6.1	II. N.
3	23 5.54	2.092	1 55 39.87	135.67	+13 54 25.6	+930.5	68.72	16 4.3	58 52.7	II. N.
4	23 58.13	2.297	2 52 20.05	148.02	19 44 17.4	805.7	71.87	16 14.7	59 31.3	I. S.
6	0 55.88	2.514	3 54 11.36	161.09	24 27 56.1	598.6	75.14	16 21.9	59 57.3	I. S.
7	1 58.42	2.681	5 0 50.31	171.24	27 32 42.7	+314.5	77.62	16 25.4	60 9.7	I. S.
8	3 3.66	2.729	6 10 12.40	174.13	28 33 24.6	− 12.8	78.37	16 24.9	60 8.4	I. S.
9	4 8.33	2.636	7 18 59.96	168.50	+27 22 31.2	−334.1	77.10	16 21.1	59 54.1	I. N.
10	5 9.44	2.446	8 24 12.73	156.99	24 13 17.7	−599.7	74.34	16 14.6	59 30.2	I. N.
11	6 5.51	2.229	9 24 22.57	143.80	19 32 25.5	−790.9	71.10	16 6.5	59 0.5	I. N.
12	6 56.66	2.042	10 19 36.56	132.64	13 49 39.8	−911.0	68.16	15 57.5	58 27.4	I. N.
13	7 43.94	1.908	11 10 58.01	124.68	7 31 29.3	−970.7	65.97	15 48.2	57 53.3	I. N.
14	8 28.74	1.835	11 59 50.47	120.27	+ 0 59 41.1	−980.9	64.70	15 39.0	57 19.5	I. N.
15	9 12.48	1.818	12 47 38.13	119.24	− 5 27 37.5	−949.0	64.35	15 30.1	56 46.8	I. N.
16	9 56.41	1.849	13 35 37.29	121.11	−11 34 22.5	−878.5	64.82	15 21.6	56 15.4	I. N.
17	10 41.58	1.920	14 24 51.49	125.33	−17 5 17.0	−769.8	65.92	15 13.4	55 45.6	I. N.
18	11 28.73	2.012	15 16 5.09	130.87	−21 45 18.4	−694.3	67.38	15 5.9	55 18.0	I. N. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
May 18	11 28.73	2.012	15 16 5.09	130.87	−21 45 18.4	−624.3	67.38	15 5.9	55 18.0	I. N. S.
19	12 18.15	2.102	16 9 35.05	136.31	−25 20 3.2	−444.7	68.83	14 59.1	54 53.2	II. S.
20	13 9.44	2.164	17 4 57.09	140.11	−27 37 18.5	−238.9	69.83	14 53.4	54 32.3	II. S.
21	14 1.66	2.177	18 1 15.84	140.83	−28 29 17.4	− 21.4	70.08	14 49.2	54 16.5	II. S.
22	14 53.49	2.132	18 57 10.57	138.04	−27 54 27.3	+199.4	69.46	14 46.7	54 7.3	II. N. S.
23	15 43.69	2.045	19 51 27.09	132.90	−25 57 39.6	+386.0	68.14	14 46.3	54 5.9	II. N.
24	16 31.52	1.940	20 43 21.22	126.60	−22 48 22.7	554.3	66.51	14 48.4	54 13.8	II. N.
25	17 16.87	1.843	21 32 46.54	120.72	−18 38 3.7	692.4	64.89	14 53.3	54 31.5	II. N.
26	18 0.20	1.773	22 20 9.71	116.49	−13 38 12.4	802.4	63.80	15 0.9	54 59.5	II. N.
27	18 42.32	1.744	23 6 20.61	114.84	− 7 59 36.3	886.5	63.32	15 11.2	55 37.6	II. N.
28	19 24.33	1.765	23 52 24.74	116.13	− 1 52 50.6	+942.7	63.77	15 24.1	56 24.7	II. N.
29	20 7.51	1.842	0 39 39.17	120.72	+ 4 30 18.9	966.8	64.88	15 38.8	57 18.5	II. N.
30	20 53.29	1.963	1 29 30.27	129.17	10 54 53.8	947.4	67.12	15 54.3	58 15.4	II. N.
31	21 43.18	2.183	2 23 28.44	141.16	17 0 21.3	867.4	70.22	16 9.3	59 11.2	II. N.
June 1	22 38.48	2.428	3 22 51.62	155.87	22 18 46.0	709.5	73.86	16 22.5	59 59.8	II. N.
2	23 39.64	2.661	4 28 8.30	169.96	+26 15 40.8	+460.8	77.25	16 32.3	60 35.7	II. S.
4	0 45.49	2.801	5 38 6.25	178.41	28 16 49.1	+135.9	79.25	16 37.3	60 54.1	I. S.
5	1 52.86	2.783	6 49 36.16	177.31	28 1 1.2	−213.5	79.02	16 37.2	60 54.7	I. S.
6	2 57.88	2.616	7 58 44.66	167.24	25 31 9.7	−524.6	76.70	16 32.2	60 35.1	I. N.
7	3 57.88	2.379	9 2 51.00	153.01	21 12 6.4	−755.7	73.31	16 23.4	60 3.1	I. N.
8	4 52.19	2.153	10 1 15.31	139.38	+15 38 5.3	−900.5	69.87	16 11.7	59 20.5	I. N.
9	5 41.63	1.977	10 54 46.14	128.79	9 21 23.4	−972.0	67.12	15 59.1	58 33.4	I. N.
10	6 27.62	1.865	11 44 49.45	122.12	+ 2 47 53.1	−987.2	65.30	15 46.2	57 46.1	I. N.
11	7 11.70	1.817	12 32 58.21	119.20	− 3 42 37.1	−958.7	64.47	15 34.1	57 1.4	I. N.
12	7 55.30	1.824	13 20 38.05	119.63	− 9 54 17.2	−894.0	64.54	15 23.0	56 20.8	I. N.
13	8 39.64	1.876	14 9 2.40	122.76	−15 33 9.7	−795.6	65.35	15 13.2	55 45.1	I. N.
14	9 25.66	1.960	14 59 7.64	127.84	−20 25 47.0	−663.0	66.66	15 4.9	55 14.5	I. N.
15	10 13.88	2.057	15 51 25.24	133.58	−24 18 41.7	−496.4	68.13	14 58.0	54 49.1	I. N.
16	11 4.24	2.136	16 45 52.05	138.32	−26 59 19.7	−302.6	69.34	14 52.6	54 28.8	I. S.
17	11 56 04	2.174	17 41 44.91	140.53	−28 18 0.9	− 89.5	69.89	14 48.4	54 13.4	I. S.
18	12 48.02	2.150	18 37 49.05	139.22	−28 10 25.5	+126.2	69.57	14 45.7	54 3.2	II. S.
19	13 38.83	2.077	19 32 42.17	134.76	−26 38 54.4	327.5	68.45	14 44.5	53 59.3	II. S.
20	14 27.43	1.971	20 25 22.71	128.43	−23 51 40.5	503.2	66.82	14 45.1	54 1.1	II. N.
21	15 13.41	1.862	21 15 25.99	121.92	−20 0 24.1	647.5	65.11	14 47.7	54 10.9	II. N.
22	15 56.99	1.773	22 3 4.26	116.53	−15 17 38.4	761.1	63.69	14 52.7	54 29.0	II. N.
23	16 38.82	1.718	22 48 57.55	113.28	− 9 55 15.8	+846.1	62.81	14 59.8	54 55.5	II. N.
24	17 19.88	1.708	23 34 4.30	112.75	− 4 4 11.6	904.6	62.72	15 9.6	55 31.5	II. N.
25	18 1.35	1.753	0 19 35.74	115.43	+ 2 4 52.0	935.6	63.48	15 22.0	56 17.2	II. N.
26	18 44.58	1.858	1 6 53.61	121.71	8 19 53.4	933.2	65.21	15 36.1	57 8.8	II. N.
27	19 31.09	2.027	1 57 28.35	131.84	14 25 21.3	885.6	67.91	15 51.8	58 6.5	II. N.
28	20 22.40	2.255	2 52 51.60	145.60	+19 59 48.1	+775.8	71.44	16 7.8	59 5.5	II. N.
29	21 19.66	2.517	3 54 13.51	161.29	24 34 5.9	581.6	75.27	16 22.8	60 0.6	II. N.
30	22 22.91	2.740	5 1 36.45	174.80	27 33 16.4	+300.2	78.44	16 34.9	60 45.3	II. S.
July 1	23 30.27	2.842	6 13 4.72	180.85	28 25 22.8	− 45.8	79.80	16 42.5	61 12.8	II. S.
3	0 37.96	2.771	7 24 53.51	176.54	+26 56 0.7	−395.2	78.80	16 44.5	61 21.3	I. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
July 3	0 37.96	2.771	7 24 53.51	176.54	+26 56 0.7	−395.2	78.80	16 44.5	61 21.3	I. S.
4	1 42.18	2.567	8 33 14.16	164.30	23 17 7.5	−685.4	75.94	16 40.7	61 6.1	I. N. S.
5	2 40.90	2.325	9 36 3.21	149.73	18 0 39.8	−880.4	72.42	16 31.8	60 33.5	I. N.
6	3 34.06	2.113	10 33 17.97	136.96	11 44 17.1	−986.6	69.21	16 19.2	59 47.4	I. N.
7	4 22.81	1.960	11 26 7.53	127.94	+ 5 1 7.0	−1018.5	66.82	16 4.3	58 52.7	I. N.
8	5 8.70	1.874	12 16 5.04	122.64	− 1 43 18.2	−996.2	65.44	15 49.1	57 56.3	I. N.
9	5 53.26	1.848	13 4 42.70	121.07	− 8 9 57.0	−931.4	65.05	15 34.4	57 2.4	I. N.
10	6 37.85	1.874	13 53 21.91	122.66	−14 3 56.3	−833.4	65.46	15 21.1	56 13.7	I. N.
11	7 23.55	1.939	14 43 8.23	126.51	−19 12 23.3	−704.1	66.48	15 9.8	55 32.4	I. N.
12	8 11.10	2.024	15 34 45.32	131.64	−23 23 6.9	−544.7	67.81	15 0.7	54 58.6	I. N.
13	9 0.70	2.106	16 28 26.25	136.57	−26 24 30.5	−357.7	69.04	14 53.6	54 32.8	I. N.
14	9 51.95	2.156	17 23 46.05	139.64	−28 6 45.5	−150.7	69.76	14 48.6	54 14.4	I. S.
15	10 43.83	2.155	18 19 43.96	139.61	−28 24 0.8	+ 64.2	69.71	14 45.5	54 2.7	I. S.
16	11 35.03	2.102	19 15 0.99	136.31	−27 16 16.4	271.2	68.81	14 44.0	53 57.7	I. S.
17	12 24.39	2.006	20 8 27.07	130.58	−24 49 40.1	456.4	67.30	14 44.2	53 58.2	II. S.
18	13 11.24	1.895	20 59 22.49	123.81	−21 14 53.7	+611.5	65.55	14 45.9	54 4.6	II. N.
19	13 55.54	1.796	21 47 44.20	117.97	−16 44 48.0	733.6	63.94	14 49.3	54 16.8	II. N.
20	14 37.74	1.724	22 33 59.71	113.63	−11 32 18.5	823.9	62.80	14 54.3	54 35.3	II. N.
21	15 18.65	1.690	23 18 57.72	111.64	− 5 49 38.8	884.7	62.26	15 1.1	55 0.4	II. N.
22	15 59.31	1.703	0 3 40.79	112.46	+ 0 11 42.9	917.6	62.55	15 9.9	55 32.6	II. N.
23	16 40.94	1.773	0 49 21.77	116.51	+ 6 20 8.8	+919.5	63.76	15 20.9	56 12.5	II. N.
24	17 24.89	1.894	1 37 22.60	124.12	12 22 19.6	884.6	65.89	15 33.4	56 58.9	II. N.
25	18 12.61	2.087	2 29 10.41	135.41	18 1 17.4	800.9	68.92	15 47.5	57 50.9	II. N.
26	19 5.46	2.392	3 26 6.61	149.57	22 54 22.4	652.8	72.55	16 2.4	58 45.8	II. N.
27	20 4.20	2.568	4 28 57.21	164.38	26 32 30.7	424.7	76.13	16 17.0	59 39.5	II. N.
28	21 8.24	2.750	5 37 6.18	175.30	+28 23 42.3	+115.9	78.66	16 29.8	60 26.4	II. S.
29	22 15.07	2.793	6 48 3.91	177.85	28 3 9.4	−229.8	79.20	16 39.1	61 0.8	II. S.
30	23 21.04	2.687	7 58 9.21	171.61	25 25 41.1	−553.7	77.60	16 43.4	61 16.3	II. S.
Aug. 1	0 23.06	2.478	9 4 17.49	158.99	20 50 1.3	−806.7	74.63	16 42.1	61 11.2	I. S.
2	1 19.91	2.261	10 5 13.96	145.85	14 50 18.5	−972.7	71.41	16 35.2	60 46.0	I. N.
3	2 11.97	2.089	11 1 22.81	135.57	+ 8 3 44.9	−1045.4	68.73	16 23.8	60 3.5	I. N.
4	3 0.50	1.969	11 53 59.21	128.33	+ 1 2 46.8	−1048.0	66.92	16 9.2	59 10.5	I. N.
5	3 46.98	1.913	12 44 32.29	125.01	− 5 47 10.4	−993.4	66.09	15 53.2	58 11.8	I. N.
6	4 32.81	1.912	13 34 26.22	124.94	−12 6 49.6	−898.1	66.13	15 37.4	57 13.8	I. N.
7	5 19.17	1.955	14 24 51.83	127.51	−17 41 3.8	−767.6	66.83	15 22.5	56 19.1	I. N.
8	6 6.90	2.024	15 16 40.05	131.67	−22 17 10.5	−611.6	67.97	15 10.2	55 33.6	I. N.
9	6 56.40	2.099	16 10 14.56	136.12	−25 43 59.8	−422.3	69.13	15 0.1	54 56.6	I. N.
10	7 47.47	2.152	17 5 24.20	139.35	−27 52 12.5	−216.3	69.85	14 52.6	54 29.1	I. N.
11	8 39.36	2.164	18 1 22.47	140.02	−28 35 43.0	− 1.1	70.03	14 47.8	54 11.1	I. S.
12	9 30.90	2.124	18 56 59.65	137.60	−27 53 19.8	+211.2	69.30	14 45.1	54 2.1	I. S.
13	10 20.93	2.040	19 51 6.22	132.61	−25 49 24.8	+404.9	67.94	14 44.9	54 0.8	I. S.
14	11 8.67	1.937	20 42 55.30	126.38	−22 33 6.7	571.4	66.23	14 46.4	54 6.3	I. S.
15	11 53.90	1.835	21 32 13.26	120.25	−18 16 25.7	706.5	64.53	14 49.5	54 17.5	I. S.
16	12 36.91	1.752	22 19 17.30	115.37	−13 12 24.9	808.4	63.16	14 53.8	54 33.9	II. N. S.
17	13 18.35	1.704	23 4 47.16	112.61	− 7 34 2.6	+878.1	62.39	14 59.6	54 54.8	II. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Aug. 18	13 59.14	1.698	23 49 37.36	112.14	− 1 33 54.6	+917.5	62.32	15 6.4	55 19.9	II. N.
19	14 40.33	1.741	0 34 52.62	114.60	+ 4 35 21.9	923.6	63.10	15 14.5	55 49.6	II. N.
20	15 23.15	1.836	1 21 45.22	120.27	10 40 14.9	894.3	64.76	15 23.7	56 23.4	II. N.
21	16 8.88	1.984	2 11 33.22	129.23	16 25 0.7	821.3	67.25	15 34.1	57 1.7	II. N.
22	16 58.76	2.179	3 5 30.78	140.96	21 30 12.9	694.5	70.40	15 45.5	57 43.7	II. N.
23	17 53.73	2.401	4 4 34.23	154.28	+25 31 49.6	+502.3	73.78	15 57.6	58 27.8	II. N.
24	18 53.79	2.594	5 8 44.65	165.96	28 2 27.9	+237.8	76.61	16 9.6	59 12.0	II. N.
25	19 57.54	2.697	6 16 36.43	172.11	28 37 1.8	− 73.6	78.03	16 20.6	59 52.3	II. S.
26	21 2.18	2.666	7 25 22.15	170.33	27 2 6.3	−400.6	77.53	16 29.2	60 24.3	II. S.
27	22 4.71	2.599	8 32 0.54	169.07	23 23 15.1	−681.2	75.47	16 34.3	60 43.1	II. S.
28	23 3.22	2.344	9 34 37.40	150.93	+18 3 36.0	−898.8	72.68	16 34.8	60 45.2	II. S.
29	23 57.37	2.174	10 32 51.67	140.61	11 35 39.0	−1026.5	70.05	16 30.6	60 29.5	II. S.
31	0 47.91	2.047	11 27 29.04	133.02	+ 4 33 0.9	−1073.4	68.08	16 21.8	59 56.9	I. N.
Sept. 1	1 36.10	1.978	12 19 44.95	128.86	− 2 34 19.4	−1052.4	67.01	16 9.4	59 11.3	I. N.
2	2 23.27	1.961	13 10 59.58	127.95	− 9 21 31.9	−975.2	66.81	15 54.9	58 18.1	I. N.
3	3 10.62	1.992	14 2 24.54	129.68	−15 28 34.2	−853.1	67.34	15 39.7	57 21.9	I. N.
4	3 59.04	2.048	14 54 54.29	133.09	−20 39 16.5	−695.0	68.34	15 25.0	56 22.4	I. N.
5	4 49.02	2.115	15 48 57.81	137.14	−24 40 29.7	−507.1	69.47	15 12.1	55 40.5	I. N.
6	5 40.49	2.169	16 44 31.29	140.34	−27 22 1.7	−297.7	70.29	15 1.5	55 1.7	I. N.
7	6 32.82	2.184	17 40 55.94	141.25	−28 37 23.1	− 78.4	70.53	14 53.6	54 32.9	I. N.
8	7 24.93	2.151	18 37 7.73	139.25	−28 24 53.9	+138.7	69.82	14 46.8	54 14.6	I. S.
9	8 15.69	2.075	19 31 58.73	134.69	−26 48 11.8	340.5	68.71	14 46.8	54 7.5	I. S.
10	9 4.30	1.974	20 24 39.53	128.60	−23 55 24.6	518.4	67.02	14 47.3	54 9.6	I. S.
11	9 50.43	1.871	21 14 51.52	122.45	−19 57 31.9	665.8	65.29	14 50.2	54 20.0	I. S.
12	10 34.29	1.787	22 2 46.64	117.39	−15 6 49.4	782.2	63.80	14 54.8	54 37.3	I. S.
13	11 16.45	1.732	22 48 59.88	114.09	− 9 35 48.3	+867.2	62.84	15 0.9	54 59.7	I. S.
14	11 57.76	1.716	23 34 21.63	113.15	− 3 37 9.3	920.3	62.56	15 8.0	55 25.4	II. N. S.
15	12 39.21	1.745	0 19 52.12	114.87	+ 2 35 59.5	939.3	63.06	15 15.7	55 54.1	II. N.
16	13 21.92	1.822	1 6 38.44	119.48	8 49 18.5	920.3	64.40	15 23.9	56 24.0	II. N.
17	14 7.08	1.948	1 55 51.73	127.10	14 46 22.8	860.0	66.54	15 32.2	56 54.6	II. N.
18	14 55.82	2.120	2 48 40.80	137.36	+20 7 50.1	+746.7	69.34	15 40.7	57 25.7	II. N.
19	15 49.01	2.314	3 45 57.69	149.12	24 30 53.2	568.0	72.42	15 49.0	57 56.5	II. N.
20	16 46.81	2.495	4 47 51.73	159.98	27 30 30.0	394.2	75.16	15 57.4	58 27.1	II. N.
21	17 48.20	2.604	5 53 21.51	166.53	28 43 31.3	+ 34.7	76.78	16 5.3	58 56.2	II. N.
22	18 50.94	2.604	7 0 12.96	166.56	27 55 38.7	−273.9	76.76	16 12.4	59 22.8	II. S.
23	19 52.38	2.502	8 5 46.17	160.38	+25 7 26.4	−560.3	75.22	16 18.0	59 42.6	II. S.
24	20 50.60	2.343	9 8 5.39	150.90	20 34 34.8	−793.0	72.80	16 21.2	59 54.9	II. S.
25	21 44.90	2.186	10 6 28.94	141.36	14 42 32.0	−955.2	70.31	16 21.6	59 56.4	II. S.
26	22 35.80	2.064	11 1 27.76	134.00	8 0 13.3	−1044.5	68.34	16 18.7	59 45.5	II. S.
27	23 24.35	1.991	11 54 4.99	129.66	+ 0 56 1.3	−1065.6	67.15	16 12.1	59 21.4	II. S.
29	0 11.80	1.971	12 45 36.37	128.46	− 6 4 0.4	−1024.9	66.83	16 2.6	58 46.3	I. N.
30	0 59.35	1.998	13 37 13.95	130.07	−12 36 40.5	−929.9	67.30	15 50.8	58 2.8	I. N.
Oct. 1	1 47.98	2.058	14 29 56.12	133.69	−18 21 43.5	−788.2	68.31	15 37.8	57 15.1	I. N.
2	2 38.25	2.132	15 24 17.62	138.11	−23 1 54.9	−607.5	69.55	15 24.7	56 26.9	I. N.
3	3 30.21	2.194	16 20 20.30	141.85	−26 23 35.5	−397.1	70.59	15 12.6	55 42.5	I. N.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s	′ ″	′ ″	
Oct. 4	4 23.26	2.219	17 17 28.31	143.34	−28 17 43.0	−172.1	71.06	15 2.6	55 5.5	I. N.
5	5 16.30	2.192	18 14 35.78	141.72	−28 41 4.1	+ 54.2	70.67	14 54.7	54 36.9	I. S.
6	6 8.09	2.116	19 10 28.49	137.25	−27 36 35.1	265.0	69.50	14 49.9	54 19.4	I. S.
7	6 57.69	2.013	20 4 9.29	130.97	−25 12 15.8	451.8	67.79	14 48.2	54 13.1	I. S.
8	7 44.69	1.904	20 55 13.47	124.43	−21 39 1.4	609.2	66.00	14 49.5	54 17.6	I. S.
9	8 29.23	1.811	21 43 49.70	118.87	−17 8 43.3	+736.9	64.39	14 53.5	54 32.5	I. S.
10	9 11.88	1.747	22 30 32.07	115.17	−11 53 6.0	836.1	63.26	14 59.8	54 55.3	I. S.
11	9 53.47	1.724	23 16 11.20	113.73	− 6 3 42.8	905.8	62.79	15 7.9	55 25.1	I. S.
12	10 35.04	1.744	0 1 47.97	114.91	+ 0 7 23.0	943.9	63.10	15 17.2	55 59.3	I. S.
13	11 17.67	1.819	0 48 30.21	119.04	6 26 34.9	945.1	64.24	15 26.9	56 35.1	I. S.
14	12 2.60	1.936	1 37 29.94	126.25	+12 37 34.9	+901.5	66.22	15 36.4	57 10.3	II. N.
15	12 50.99	2.103	2 29 57.63	136.35	18 20 22.2	802.4	68.90	15 45.3	57 42.7	II. N.
16	13 43.75	2.296	3 26 48.53	148.02	23 10 54.5	639.2	71.96	15 53.1	58 11.2	II. N.
17	14 41.13	2.479	4 28 17.26	158.90	26 42 35.1	406.6	74.75	15 59.3	58 34.2	II. N.
18	15 42.21	2.595	5 33 28.61	165.99	28 30 38.6	+123.9	76.51	16 4.1	58 52.0	II. N.
19	16 44.81	2.603	6 40 11.25	166.50	+28 19 20.3	−181.7	76.66	16 7.6	59 4.7	II. S.
20	17 46.20	2.499	7 45 41.70	160.25	26 7 59.6	−468.9	75.21	16 9.7	59 12.5	II. S.
21	18 44.33	2.338	8 47 55.11	150.54	22 10 56.7	−706.6	72.78	16 10.5	59 15.4	II. S.
22	19 38.41	2.172	9 46 5.48	140.53	16 51 41.2	−878.8	70.21	16 10.0	59 13.2	II. S.
23	20 28.85	2.039	10 40 36.60	132.57	10 36 22.5	−983.5	68.05	16 7.7	59 5.0	II. S.
24	21 16.70	1.957	11 32 32.07	127.63	+ 3 50 11.1	−1033.4	66.67	16 3.7	58 50.4	II. S.
25	22 3.26	1.932	12 23 9.82	126.04	− 3 3 35.2	−1025.5	66.18	15 57.8	58 28.7	II. S.
26	22 49.80	1.955	13 13 46.78	127.50	− 9 43 11.8	−964.2	66.53	15 50.0	58 0.2	II. S.
27	23 37.44	2.019	14 5 29.45	131.38	−15 48 3.7	−852.4	67.55	15 40.7	57 26.1	II. N.
29	0 26.94	2.107	14 59 4.18	136.60	−20 58 48.3	−694.7	68.95	15 30.4	56 48.2	I. N.
30	1 18.55	2.191	15 54 45.69	141.65	−24 58 11.0	−496.9	70.30	15 19.8	56 9.0	I. N.
31	2 11.82	2.241	16 52 7.50	144.68	−27 32 51.8	−273.3	71.15	15 9.7	55 32.0	I. N.
Nov. 1	3 5.67	2.236	17 50 3.43	144.35	−28 35 39.4	− 40.6	71.15	15 0.9	54 59.6	I. N.
2	3 58.65	2.170	18 47 7.45	140.45	−28 6 52.9	+181.5	70.22	14 54.1	54 34.6	I. S.
3	4 49.50	2.063	19 42 4.22	134.02	−26 13 41.5	379.2	68.70	14 49.7	54 18.5	I. S.
4	5 37.58	1.941	20 34 12.78	126.67	−23 7 29.0	+543.1	66.64	14 48.2	54 13.2	I. S.
5	6 22.83	1.832	21 23 31.82	120.11	−19 0 57.7	686.2	64.84	14 49.9	54 19.1	I. S.
6	7 5.77	1.750	22 10 31.78	115.28	−14 6 14.6	787.7	63.44	14 54.4	54 36.0	I. S.
7	7 47.24	1.709	22 56 3.47	112.90	− 8 34 19.7	867.5	62.71	15 1.9	55 3.3	I. S.
8	8 28.29	1.716	23 41 9.96	113.19	− 2 35 38.8	920.9	62.75	15 11.7	55 39.4	I. S.
9	9 10.11	1.775	0 27 2.46	116.67	+ 3 38 28.0	+943.9	63.68	15 23.3	56 21.9	I. S.
10	9 53.98	1.889	1 14 58.25	123.52	9 54 18.1	928.0	65.53	15 36.2	57 7.5	I. S.
11	10 41.22	2.057	2 6 17.14	133.61	15 53 51.8	859.8	68.15	15 48.0	57 52.8	I. S.
12	11 33.03	2.264	3 2 10.53	146.14	21 13 36.2	726.5	71.36	15 59.2	58 33.6	I. N.
13	12 30.03	2.481	4 3 16.53	159.13	25 24 44.5	516.1	74.62	16 8.2	59 6.8	II. N.
14	13 31.68	2.641	5 9 2.44	168.75	+27 57 15.1	+236.2	76.98	16 14.4	59 29.6	II. N.
15	14 35.86	2.684	6 17 20.48	171.34	28 28 25.7	− 83.1	77.66	16 17.5	59 40.9	II. N.
16	15 39.42	2.592	7 25 1.08	165.86	26 52 16.9	−391.4	76.42	16 17.5	59 41.2	II. S.
17	16 39.61	2.414	8 29 18.86	155.10	23 21 59.0	−648.0	73.86	16 15.1	59 32.3	II. S.
18	17 35.17	2.218	9 28 57.81	143.28	+18 23 6.7	−833.7	70.91	16 10.8	59 16.2	II. S.

AT TRANSIT OF MOON'S CENTRE OVER THE MERIDIAN OF WASHINGTON.

Date.	Mean Time of Transit.	Diff. for 1 Hour of Long.	Right Ascension of Centre.	Diff. for 1 Hour of Long.	Geocentric Declination of Centre.	Diff. for 1 Hour of Long.	Sid. Time of Semid. Passing Meridian.	Geocentric Semi-diameter.	Equatorial Horizontal Parallax.	Bright Limbs.
	h m	m	h m s	s	° ′ ″	″	s.	′ ″	′ ″	
Nov. 19	18 26.30	2.052	10 24 10.64	133.31	+12 24 20.3	−945.3	68.31	16 5.1	58 55.5	II. S.
20	19 14.09	1.940	11 16 2.40	126.60	+ 5 51 47.8	−1004.2	66.50	15 58.6	58 31.5	II. S.
21	19 59.94	1.889	12 5 57.45	123.55	− 0 52 10.4	−1007.5	65.62	15 51.5	58 5.5	II. S.
22	20 45.26	1.895	12 55 21.07	123.81	− 7 28 3.3	−963.7	65.65	15 43.9	57 37.7	II. S.
23	21 31.34	1.951	13 45 29.87	127.23	−13 37 42.7	−876.3	66.47	15 36.0	57 8.7	II. S.
24	22 19.18	2.039	14 37 24.43	132.58	−19 3 22.6	−739.5	67.84	15 27.8	56 38.4	II. S.
25	23 9.33	2.140	15 31 38.54	138.57	−23 27 39.6	−570.4	69.39	15 19.4	56 10.2	II. N.
27	0 1.71	2.219	16 28 6.61	143.35	−26 34 54.0	−361.7	70.62	15 11.1	55 37.2	I. N.
28	0 55.46	2.249	17 25 56.98	145.17	−28 13 49.6	−132.0	71.10	15 3.3	55 8.5	I. N.
29	1 49.13	2.212	18 23 42.54	142.97	−28 20 17.7	+ 97.7	70.60	14 56.5	54 43.4	I. N.
30	2 41.18	2.115	19 19 50.58	137.14	−26 58 19.2	+308.3	69.22	14 51.1	54 23.3	I. N. S.
Dec. 1	3 30.52	1.992	20 13 15.50	129.67	−24 18 23.4	486.3	67.27	14 47.7	54 11.0	I. S.
2	4 16.77	1.864	21 3 34.92	122.06	−20 34 3.6	629.7	65.28	14 46.7	54 7.4	I. S.
3	5 0.23	1.760	21 51 6.13	115.80	−15 58 55.3	740.8	63.58	14 48.3	54 13.6	I. S.
4	5 41.63	1.694	22 36 33.56	111.85	−10 45 2.4	894.2	62.48	14 53.0	54 30.6	I. S.
5	6 21.99	1.675	23 20 57.96	110.64	− 5 2 53.2	+882.6	62.13	15 0.6	54 58.6	I. S.
6	7 2.47	1.705	0 5 29.89	112.55	+ 0 57 43.4	916.0	62.64	15 11.1	55 37.0	I. S.
7	7 44.38	1.795	0 51 27.95	117.87	7 6 3.4	990.0	64.10	15 23.9	56 24.2	I. S.
8	8 29.13	1.943	1 40 17.25	126.79	13 8 22.3	883.6	66.51	15 38.5	57 17.5	I. S.
9	9 18.18	2.151	2 33 24.79	139.32	18 45 41.9	791.7	69.74	15 53.6	58 13.1	I. S.
10	10 12.72	2.396	3 32 2.30	153.99	+23 32 7.9	+626.3	73.11	16 8.0	59 6.0	I. S.
11	11 13.07	2.624	4 36 29.89	167.72	26 55 42.6	377.8	76.70	16 20.2	59 50.8	I. N.
12	12 17.94	2.759	5 45 29.47	175.86	28 24 52.2	+ 59.0	78.60	16 28.7	60 21.9	II. N.
13	13 24.24	2.738	6 55 55.16	174.68	27 40 34.8	−279.2	78.36	16 32.7	60 36.8	II. N.
14	14 28.32	2.583	8 4 7.05	165.29	24 46 21.5	−579.9	76.18	16 32.0	60 34.2	II. S.
15	15 27.74	2.363	9 7 38.07	152.12	+20 6 22.3	−804.1	73.03	16 27.1	60 16.0	II. S.
16	16 21.93	2.158	10 5 55.26	139.68	14 13 58.4	−949.9	69.92	16 18.8	59 46.1	II. S.
17	17 11.74	2.002	10 59 48.25	130.34	7 41 14.7	−1009.0	67.51	16 8.6	59 8.5	II. S.
18	17 58.58	1.911	11 50 42.89	124.88	+ 0 54 38.5	−1015.3	66.05	15 57.5	58 27.5	II. S.
19	18 43.99	1.883	12 40 11.79	123.15	− 5 44 50.8	−974.9	65.57	15 46.2	57 46.3	II. S.
20	19 29.41	1.909	13 29 40.73	124.65	−11 59 49.2	−895.0	65.98	15 35.7	57 7.2	II. S.
21	20 16.04	1.960	14 20 22.78	128.96	−17 34 31.7	−775.3	67.05	15 25.6	56 30.7	II. S.
22	21 4.65	2.075	15 13 3.90	134.66	−22 13 42.3	−616.1	68.49	15 16.8	55 58.0	II. S.
23	21 55.57	2.166	16 8 4.55	140.18	−25 42 42.0	−424.3	69.86	15 8.8	55 28.7	II. S.
24	22 48.35	2.222	17 4 56.11	143.57	−27 49 8.4	−205.5	70.69	15 1.8	55 2.8	II. N.
25	23 41.79	2.220	18 2 28.25	143.42	−28 25 45.0	+ 22.9	70.61	14 55.8	54 40.8	II. N.
27	0 34.37	2.152	18 59 8.31	139.35	−27 32 40.0	239.4	69.57	14 50.8	54 22.4	I. N.
28	1 24.73	2.037	19 53 34.31	132.45	−25 17 30.1	430.4	67.81	14 47.1	54 9.1	I. N. S.
29	2 12.10	1.908	20 45 0.96	124.69	−21 52 54.8	586.1	65.82	14 45.7	54 1.2	I. S.
30	2 56.44	1.790	21 33 25.42	117.55	−17 33 18.9	706.0	63.88	14 44.7	54 0.1	I. S.
31	3 38.26	1.699	22 19 18.04	112.19	−12 32 23.4	+795.1	62.44	14 46.6	54 7.2	I. S.

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	22 54.5	17 39 43.10	−23 26 57.3	6.7	2.5	0.19	Feb. 16	1 8.3	22 55 11.07	−7 30 58.7	7.6	2.8	0.19
1	22 57.0	17 46 9.27	23 36 53.2	6.7	2.5	0.19	17	1 10.4	23 1 14.95	6 41 23.9	7.7	2.9	0.20
2	22 59.5	17 52 38.67	23 45 41.5	6.6	2.5	0.19	18	1 12.4	23 7 7.36	5 51 56.2	7.9	3.0	0.20
3	23 2.1	17 59 11.11	23 53 20.3	6.6	2.5	0.18	19	1 14.1	23 12 46.59	5 2 52.0	8.0	3.0	0.21
4	23 4.8	18 5 46.38	23 59 47.7	6.5	2.5	0.18	20	1 15.5	23 18 10.86	4 14 30.0	8.2	3.1	0.21
5	23 7.5	18 12 24.34	−24 5 2.1	6.5	2.5	0.18	21	1 16.6	23 23 18.26	−3 27 9.5	8.4	3.2	0.21
6	23 10.2	18 19 4.31	24 9 1.8	6.5	2.5	0.18	22	1 17.5	23 28 6.81	2 41 11.3	8.7	3.3	0.22
7	23 13.0	18 25 47.62	24 11 45.7	6.5	2.4	0.18	23	1 18.1	23 32 34.47	1 56 57.1	8.9	3.3	0.22
8	23 15.8	18 32 32.61	24 13 12.2	6.4	2.4	0.18	24	1 18.2	23 36 39.20	1 14 48.5	9.2	3.4	0.23
9	23 18.6	18 39 19.67	24 13 19.9	6.4	2.4	0.18	25	1 17.9	23 40 19.01	−0 35 8.5	9.4	3.5	0.23
10	23 21.5	18 46 8.64	−24 12 7.8	6.4	2.4	0.18	26	1 17.2	23 43 32.04	+0 1 40.9	9.7	3.6	0.24
11	23 24.4	18 52 59.41	24 9 34.6	6.3	2.4	0.18	27	1 16.0	23 46 16.64	0 35 18.8	10.0	3.7	0.24
12	23 27.3	18 59 51.83	24 5 39.9	6.3	2.4	0.18	28	1 14.2	23 48 31.32	1 5 24.8	10.3	3.8	0.25
13	23 30.2	19 6 45.78	24 0 21.7	6.3	2.4	0.17	Mar. 1	1 12.0	23 50 14.85	1 31 40.0	10.6	4.0	0.26
14	23 33.2	19 13 41.16	23 53 39.4	6.3	2.4	0.17	2	1 9.3	23 51 26.44	1 53 47.7	10.9	4.1	0.27
15	23 36.2	19 20 37.86	−23 45 32.2	6.3	2.4	0.17	3	1 5.9	23 52 5.73	+2 11 33.3	11.3	4.3	0.28
16	23 39.2	19 27 35.76	23 35 59.2	6.3	2.4	0.17	4	1 2.1	23 52 12.72	2 24 45.1	11.6	4.4	0.29
17	23 42.2	19 34 34.77	23 24 59.4	6.2	2.4	0.17	5	0 57.8	23 51 48.01	2 33 14.8	12.0	4.5	0.30
18	23 45.3	19 41 34.76	23 12 32.1	6.2	2.4	0.17	6	0 53.0	23 50 52.67	2 36 58.1	12.3	4.7	0.31
19	23 48.3	19 48 35.64	22 58 36.7	6.2	2.4	0.17	7	0 47.6	23 49 28.42	2 35 54.9	12.7	4.8	0.32
20	23 51.4	19 55 37.32	−22 43 12.3	6.2	2.4	0.17	8	0 41.9	23 47 37.53	+2 30 9.7	13.0	4.9	0.32
21	23 54.5	20 2 39.71	22 26 18.2	6.2	2.4	0.17	9	0 35.7	23 45 22.89	2 19 53.0	13.3	5.0	0.33
22	23 57.7	20 9 42.70	22 7 54.0	6.2	2.4	0.17	10	0 29.2	23 42 47.77	2 5 19.8	13.6	5.1	0.34
24	0 0.7	20 16 46.21	21 47 59.2	6.2	2.4	0.17	11	0 22.5	23 39 56.03	1 46 51.4	13.9	5.2	0.34
25	0 3.9	20 23 50.14	21 26 33.1	6.2	2.4	0.17	12	0 15.5	23 36 51.79	1 24 53.4	14.1	5.3	0.35
26	0 7.0	20 30 54.41	−21 3 35.5	6.2	2.4	0.17	13	0 8.4	23 33 39.40	+0 59 55.6	14.3	5.4	0.35
27	0 10.1	20 37 58.88	20 39 6.0	6.3	2.4	0.17	14	0 1.2	23 30 23.26	0 32 31.8	14.4	5.4	0.36
28	0 13.3	20 45 3.45	20 13 4.1	6.3	2.4	0.17	14	23 54.0	23 27 7.72	+0 3 17.7	14.5	5.5	0.36
29	0 16.4	20 52 8.04	19 45 29.9	6.3	2.4	0.17	15	23 46.9	23 23 56.92	−0 27 10.8	14.6	5.5	0.37
30	0 19.5	20 59 12.54	19 16 23.6	6.3	2.4	0.17	16	23 39.9	23 20 54.62	0 58 17.5	14.6	5.5	0.37
31	0 22.6	21 6 16.78	−18 45 45.3	6.3	2.4	0.17	17	23 33.2	23 18 4.22	−1 29 28.1	14.5	5.5	0.37
Feb. 1	0 25.7	21 13 20.66	18 13 35.1	6.4	2.4	0.17	18	23 26.7	23 15 28.59	2 0 10.8	14.4	5.4	0.37
2	0 28.9	21 20 24.00	17 39 53.7	6.4	2.4	0.17	19	23 20.5	23 13 10.11	2 29 57.4	14.3	5.4	0.36
3	0 31.9	21 27 26.62	17 4 41.8	6.4	2.4	0.17	20	23 14.5	23 11 10.59	2 58 23.9	14.2	5.3	0.36
4	0 34.9	21 34 28.31	16 28 0.7	6.5	2.5	0.17	21	23 9.0	23 9 31.36	3 25 9.8	14.1	5.3	0.36
5	0 38.0	21 41 28.85	−15 49 51.9	6.5	2.5	0.17	22	23 3.8	23 8 13.34	−3 49 58.4	14.0	5.2	0.35
6	0 41.0	21 48 27.92	15 10 17.3	6.6	2.5	0.17	23	22 58.9	23 7 16.93	4 12 37.4	13.8	5.2	0.35
7	0 44.0	21 55 25.23	14 29 19.3	6.6	2.5	0.17	24	22 54.3	23 6 42.27	4 32 57.3	13.6	5.1	0.34
8	0 47.0	22 2 20.39	13 47 0.7	6.7	2.6	0.18	25	22 50.2	23 6 29.18	4 50 52.2	13.4	5.0	0.34
9	0 49.9	22 9 12.92	13 3 25.5	6.8	2.6	0.18	26	22 46.4	23 6 37.21	5 6 17.9	13.2	5.0	0.33
10	0 52.8	22 16 2.35	−12 18 37.9	6.9	2.6	0.18	27	22 43.0	23 7 5.78	−5 19 13.1	13.0	4.9	0.33
11	0 55.7	22 22 48.03	11 32 43.5	7.0	2.6	0.18	28	22 39.8	23 7 54.12	5 29 37.1	12.8	4.8	0.32
12	0 58.4	22 29 29.24	10 45 49.0	7.1	2.7	0.18	29	22 37.0	23 9 1.42	5 37 31.7	12.5	4.8	0.32
13	1 1.1	22 36 5.18	9 58 1.6	7.2	2.7	0.19	30	22 34.5	23 10 26.83	5 42 59.1	12.3	4.7	0.32
14	1 3.6	22 42 34.88	9 9 30.1	7.3	2.7	0.19	31	22 32.3	23 12 9.43	5 46 2.3	12.1	4.6	0.31
15	1 6.0	22 48 57.25	− 8 20 25.2	7.4	2.8	0.19	32	22 30.3	23 14 8.27	−5 46 44.9	11.9	4.5	0.31
16	1 8.3	22 55 11.07	− 7 30 58.7	7.6	2.8	0.19	33	22 28.6	23 16 22.45	−5 45 10.6	11.7	4.4	0.30

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Apr. 1	22 30.3	23 14 8.27	− 5 46 44.9	11.9	4.5	0.31
2	22 28.6	23 16 22.45	5 45 10.6	11.7	4.4	0.30
3	22 27.1	23 18 51.12	5 41 23.7	11.5	4.3	0.29
4	22 25 9	23 21 33.42	5 35 28.4	11.3	4.2	0.29
5	22 24.9	23 24 28.55	5 27 28.7	11.1	4.2	0.28
6	22 24.1	23 27 35.75	− 5 17 29.0	10.9	4.1	0.28
7	22 23.4	23 30 54.31	5 5 33.0	10.7	4.1	0.27
8	22 22.9	23 34 23.60	4 51 45.3	10.5	4.0	0.27
9	22 22.7	23 38 3.04	4 36 9.0	10.3	3.9	0.26
10	22 22.5	23 41 52.04	4 18 48.2	10.1	3.8	0.26
11	22 22.6	23 45 50.12	− 3 59 46.1	10.0	3.8	0.26
12	22 22.8	23 49 56.84	3 39 6.3	9.8	3.7	0.25
13	22 23.1	23 54 11.79	3 16 51.8	9.6	3.6	0.25
14	22 23.5	23 58 34.63	2 53 5.8	9.5	3.6	0.24
15	22 24.0	0 3 5.06	2 27 51.2	9.3	3.5	0.24
16	22 24.8	0 7 42.81	− 2 1 10.9	9.2	3.5	0.24
17	22 25.6	0 12 27.65	1 33 7.7	9.0	3.4	0.23
18	22 26.4	0 17 19.40	1 3 44.3	8.9	3.4	0.23
19	22 27.5	0 22 17.92	0 33 2.9	8.7	3.3	0.22
20	22 28.7	0 27 23.06	− 0 1 6.0	8.6	3.3	0.22
21	22 29.9	0 32 34.78	+ 0 32 3.7	8.5	3.2	0.22
22	22 31.2	0 37 53.04	1 6 23.8	8.4	3.2	0.21
23	22 32.7	0 43 17.83	1 41 51.9	8.3	3.1	0.21
24	22 34.3	0 48 49.14	2 18 25.5	8.2	3.1	0.20
25	22 36.0	0 54 27.02	2 56 2.3	8.1	3.0	0.20
26	22 37.7	1 0 11.59	+ 3 34 40.0	8.0	3.0	0.20
27	22 39.6	1 6 2.93	4 14 15.8	7.9	3.0	0.20
28	22 41.7	1 12 1.17	4 54 47.1	7.8	2.9	0.19
29	22 43.8	1 18 6.46	5 36 11.0	7.7	2.9	0.19
30	22 46.1	1 24 18.99	6 18 24.7	7.6	2.9	0.19
May 1	22 48.5	1 30 38.96	+ 7 1 25.1	7.5	2.8	0.19
2	22 51.0	1 37 6.61	7 45 8.8	7.4	2.8	0.19
3	22 53.6	1 43 42.18	8 29 31.9	7.4	2.8	0.19
4	22 56.4	1 50 25.88	9 14 30.6	7.3	2.7	0.18
5	22 59.4	1 57 17.99	10 0 0.7	7.2	2.7	0.18
6	23 2.4	2 4 18.80	+10 45 57.3	7.1	2.7	0.18
7	23 5.6	2 11 28.55	11 32 14.8	7.1	2.7	0.18
8	23 9.0	2 18 47.46	12 18 47.3	7.0	2.6	0.18
9	23 12.5	2 26 15.74	13 5 28.3	6.9	2.6	0.18
10	23 16.1	2 33 53.58	13 52 10.5	6.9	2.6	0.18
11	23 20.0	2 41 41.10	+14 38 46.0	6.8	2.6	0.18
12	23 24.0	2 49 38.36	15 25 5.8	6.8	2.6	0.18
13	23 28.1	2 57 45.31	16 11 0.1	6.8	2.5	0.18
14	23 32.5	3 6 1.84	16 56 18.7	6.7	2.5	0.18
15	23 37.0	3 14 27.72	17 40 50.0	6.7	2.5	0.18
16	23 41.6	3 23 2.52	+18 24 22.7	6.7	2.5	0.18
17	23 46.4	3 31 45.71	+19 6 44.1	6.7	2.5	0.18
May 17	23 46.4	3 31 45.71	+19 6 44.1	6.7	2.5	0.18
18	23 51.3	3 40 36.65	19 47 41.8	6.7	2.5	0.18
19	23 56.3	3 49 34.46	20 27 3.2	6.7	2.5	0.18
21	0 1.3	3 58 38.15	21 4 35.9	6.7	2.5	0.18
22	0 6.5	4 7 46.58	21 40 8.2	6.8	2.5	0.18
23	0 11.7	4 16 58.51	+22 13 29.3	6.8	2.6	0.19
24	0 17.0	4 26 12.60	22 44 29.6	6.8	2.6	0.19
25	0 22.3	4 35 27.43	23 13 0.6	6.9	2.6	0.19
26	0 27.5	4 44 41.60	23 38 56.1	6.9	2.6	0.19
27	0 32.8	4 53 53.70	24 2 11.1	7.0	2.6	0.19
28	0 38.0	5 3 2.32	+24 22 42.5	7.0	2.6	0.19
29	0 43.2	5 12 6.17	24 40 29.1	7.1	2.7	0.20
30	0 48.2	5 21 4.01	24 55 30.8	7.1	2.7	0.20
31	0 53.0	5 29 54.71	25 7 49.6	7.2	2.7	0.20
June 1	0 57.8	5 38 37.25	25 17 28.5	7.3	2.8	0.21
2	1 2.4	5 47 10.74	+25 24 31.7	7.4	2.8	0.21
3	1 6.8	5 55 34.36	25 29 4.2	7.5	2.8	0.21
4	1 11.1	6 3 47.42	25 31 11.8	7.6	2.9	0.22
5	1 15.1	6 11 49.30	25 31 0.8	7.8	2.9	0.22
6	1 19.0	6 19 39.53	25 28 37.9	7.9	3.0	0.22
7	1 22.7	6 27 17.65	+25 24 10.2	8.0	3.0	0.22
8	1 26.2	6 34 43.28	25 17 44.8	8.2	3.1	0.23
9	1 29.4	6 41 56.12	25 9 28.9	8.3	3.1	0.23
10	1 32.5	6 48 55.89	24 59 29.8	8.4	3.2	0.23
11	1 35.3	6 55 42.36	24 47 54.8	8.6	3.3	0.23
12	1 37.9	7 2 15.33	+24 34 51.0	8.7	3.3	0.24
13	1 40.2	7 8 34.61	24 20 25.7	8.9	3.4	0.24
14	1 42.4	7 14 40.05	24 4 45.7	9.0	3.4	0.25
15	1 44.3	7 20 31.47	23 47 57.8	9.2	3.5	0.25
16	1 46.0	7 26 8.74	23 30 8.7	9.4	3.6	0.26
17	1 47.4	7 31 31.69	+23 11 25.0	9.6	3.6	0.26
18	1 48.6	7 36 40.17	22 51 53.6	9.8	3.7	0.27
19	1 49.5	7 41 34.00	22 31 40.7	10.0	3.8	0.27
20	1 50.3	7 46 12.97	22 10 52.5	10.2	3.9	0.28
21	1 50.7	7 50 36.91	21 49 35.6	10.4	4.0	0.28
22	1 50.9	7 54 45.60	+21 27 56.2	10.6	4.1	0.29
23	1 50.9	7 58 38.82	21 6 0.4	10.8	4.1	0.29
24	1 50.7	8 2 16.29	20 43 54.3	11.0	4.2	0.30
25	1 50.0	8 5 37.74	20 21 44.4	11.2	4.3	0.30
26	1 49.2	8 8 42.87	19 59 36.9	11.4	4.4	0.31
27	1 48.0	8 11 31.41	+19 37 37.6	11.7	4.4	0.31
28	1 46.6	8 14 3.00	19 15 53.4	11.9	4.5	0.32
29	1 44.9	8 16 17.34	18 54 30.3	12.1	4.6	0.32
30	1 42.9	8 18 14.10	18 33 35.1	12.4	4.7	0.33
31	1 40.6	8 19 52.99	18 13 13.8	12.6	4.8	0.34
32	1 38.0	8 21 13.67	+17 53 33.3	12.9	4.9	0.34
33	1 35.1	8 22 15.88	+17 34 40.0	13.1	5.0	0.35

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	1 40.6	8 19 52.99	+18 13 13.8	12.6	4.8	0.34	Aug. 15	22 59.3	8 39 23.61	+18 52 47.4	8.1	3.1	0.22
2	1 38.0	8 21 13.67	17 53 33.3	12.9	4.9	0.34	16	23 2.3	8 46 20.26	18 38 14.1	7.9	3.0	0.22
3	1 35.1	8 22 15.88	17 34 40.0	13.1	5.0	0.35	17	23 5.5	8 53 30.34	18 20 53.2	7.8	3.0	0.21
4	1 31.9	8 22 59.37	17 16 40.3	13.3	5.0	0.35	18	23 9.0	9 0 51.76	18 0 45.1	7.6	2.9	0.20
5	1 28.4	8 23 23.99	16 59 40.9	13.5	5.1	0.36	19	23 12.5	9 8 22.41	17 37 53.0	7.5	2.8	0.20
6	1 24.6	8 23 29.66	+16 43 47.8	13.7	5.2	0.36	20	23 16.1	9 16 0.23	+17 12 21.7	7.4	2.8	0.19
7	1 20.5	8 23 16.40	16 29 7.5	13.9	5.3	0.37	21	23 19.9	9 23 43.22	16 44 17.7	7.2	2.7	0.19
8	1 16.0	8 22 44.33	16 15 46.0	14.2	5.3	0.37	22	23 23.7	9 31 29.49	16 13 48.9	7.1	2.7	0.18
9	1 11.3	8 21 53.75	16 3 48.8	14.4	5.4	0.38	23	23 27.5	9 39 17.32	15 41 4.5	7.0	2.6	0.18
10	1 6.2	8 20 45.16	15 53 21.0	14.6	5.5	0.38	24	23 31.3	9 47 5.15	15 6 14.6	6.9	2.6	0.18
11	1 0.8	8 19 19.27	+15 44 27.0	14.7	5.5	0.38	25	23 35.2	9 54 51.64	+14 29 29.7	6.8	2.6	0.18
12	0 55.1	8 17 37.00	15 37 10.9	14.9	5.6	0.39	26	23 39.0	10 2 35.63	13 51 0.6	6.8	2.6	0.17
13	0 49.3	8 15 39.46	15 31 35.6	15.0	5.6	0.39	27	23 42.7	10 10 16.15	13 10 58.3	6.7	2.5	0.17
14	0 43.1	8 13 28.12	15 27 43.3	15.1	5.7	0.40	28	23 46.4	10 17 52.38	12 29 33.6	6.6	2.5	0.17
15	0 36.8	8 11 4.65	15 25 34.9	15.2	5.7	0.40	29	23 49.9	10 25 23.70	11 46 56.6	6.6	2.5	0.17
16	0 30.3	8 8 31.00	+15 25 10.8	15.2	5.8	0.40	30	23 53.4	10 32 49.67	+11 3 16.7	6.5	2.5	0.17
17	0 23.7	8 5 49.39	15 26 29.4	15.3	5.8	0.40	31	23 56.8	10 40 9.93	10 18 43.3	6.5	2.5	0.17
18	0 17.0	8 3 2.35	15 29 28.2	15.3	5.8	0.40	Sept. 2	0 0.1	10 47 24.28	9 33 25.1	6.5	2.5	0.16
19	0 10.3	8 0 12.46	15 34 3.5	15.2	5.8	0.40	3	0 3.2	10 54 32.60	8 47 29.9	6.4	2.4	0.16
20	0 3.6	7 57 22.47	15 40 10.4	15.2	5.7	0.40	4	0 6.3	11 1 34.84	8 1 4.8	6.4	2.4	0.16
20	23 56.9	7 54 35.30	+15 47 43.1	15.1	5.7	0.39	5	0 9.3	11 8 31.03	+ 7 14 16.3	6.4	2.4	0.16
21	23 50.2	7 51 53.86	15 56 34.7	14.9	5.6	0.39	6	0 12.2	11 15 21.24	6 27 10.8	6.4	2.4	0.16
22	23 43.8	7 49 21.00	16 6 37.4	14.7	5.6	0.39	7	0 15.0	11 22 5.61	5 39 53.4	6.4	2.4	0.16
23	23 37.5	7 46 59.54	16 17 42.7	14.5	5.5	0.38	8	0 17.7	11 28 44.31	4 52 29.3	6.4	2.4	0.16
24	23 31.5	7 44 52.15	16 29 41.8	14.3	5.4	0.38	9	0 20.2	11 35 17.51	4 5 2.8	6.4	2.4	0.16
25	23 25.7	7 43 1.28	+16 42 25.0	14.0	5.3	0.37	10	0 22.8	11 41 45.42	+ 3 17 37.9	6.4	2.4	0.16
26	23 20.2	7 41 29.21	16 55 42.4	13.8	5.2	0.37	11	0 25.2	11 48 8.24	2 30 18.2	6.4	2.4	0.16
27	23 15.1	7 40 17.97	17 9 24.4	13.5	5.1	0.36	12	0 27.6	11 54 26.19	1 43 7.2	6.4	2.4	0.16
28	23 10.4	7 39 29.30	17 23 20.3	13.2	5.0	0.35	13	0 29.9	12 0 39.50	0 56 7.9	6.4	2.4	0.16
29	23 6.0	7 39 4.71	17 37 19.9	12.9	4.9	0.34	14	0 32.0	12 6 48.40	+ 0 9 22.9	6.4	2.4	0.16
30	23 2.1	7 39 5.40	+17 51 12.9	12.6	4.8	0.33	15	0 34.2	12 12 53.10	− 0 37 5.2	6.5	2.4	0.16
31	22 58.7	7 39 32.37	18 4 48.9	12.3	4.7	0.32	16	0 36.2	12 18 53.82	1 23 14.3	6.5	2.4	0.16
Aug. 1	22 55.6	7 40 26.39	18 17 57.1	12.0	4.5	0.32	17	0 38.2	12 24 50.77	2 9 2.4	6.5	2.4	0.16
2	22 53.0	7 41 47.93	18 30 26.7	11.6	4.4	0.31	18	0 40.2	12 30 44.14	2 54 27.2	6.5	2.4	0.16
3	22 50.9	7 43 37.33	18 42 7.0	11.3	4.3	0.30	19	0 42.1	12 36 34.12	3 39 27.0	6.5	2.5	0.16
4	22 49.3	7 45 54.70	+18 52 47.0	11.0	4.2	0.29	20	0 43.9	12 42 20.91	− 4 24 0.0	6.5	2.5	0.17
5	22 48.1	7 48 39.95	19 2 15.6	10.7	4.1	0.28	21	0 45.7	12 48 4.68	5 8 4.7	6.6	2.5	0.17
6	22 47.4	7 51 52.85	19 10 21.7	10.4	3.9	0.28	22	0 47.5	12 53 45.58	5 51 39.7	6.6	2.5	0.17
7	22 47.1	7 55 32.95	19 16 54.3	10.1	3.8	0.27	23	0 49.1	12 59 23.76	6 34 43.5	6.6	2.5	0.17
8	22 47.2	7 59 39.64	19 21 42.4	9.8	3.7	0.26	24	0 50.7	13 4 59.33	7 17 14.4	6.6	2.5	0.17
9	22 47.8	8 4 12.16	+19 24 35.2	9.6	3.6	0.25	25	0 52.3	13 10 32.43	− 7 59 11.1	6.7	2.5	0.17
10	22 48.8	8 9 9.57	19 25 22.5	9.3	3.5	0.25	26	0 53.9	13 16 3.16	8 40 32.2	6.7	2.6	0.17
11	22 50.2	8 14 30.73	19 23 54.3	9.1	3.4	0.24	27	0 55.4	13 21 31.59	9 21 16.3	6.8	2.6	0.17
12	22 52.0	8 20 14.27	19 20 2.0	8.8	3.3	0.24	28	0 56.9	13 26 57.79	10 1 22.0	6.8	2.6	0.17
13	22 54.1	8 26 18.73	19 13 37.4	8.5	3.2	0.23	29	0 58.4	13 32 21.83	10 40 47.9	6.8	2.6	0.17
14	22 56.6	8 32 42.45	+19 4 34.1	8.3	3.2	0.23	30	0 59.9	13 37 43.73	−11 19 32.7	6.9	2.7	0.17
15	22 59.3	8 39 23.61	+18 52 47.4	8.1	3.1	0.22	31	1 1.2	13 43 3.48	−11 57 34.8	6.9	2.7	0.18

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Oct. 1	1 1.2	13 43 3.48	−11 57 34.8	6.9	2.7	0.18
2	1 2.6	13 48 21.08	12 34 52.8	7.0	2.7	0.18
3	1 3.9	13 53 36.48	13 11 25.1	7.1	2.7	0.18
4	1 5.2	13 58 49.64	13 47 9.9	7.2	2.7	0.18
5	1 6.4	14 4 0.44	14 22 5.6	7.3	2.7	0.19
6	1 7.5	14 9 8.76	−14 56 10.9	7.4	2.8	0.19
7	1 8.7	14 14 14.43	15 29 23.6	7.4	2.8	0.20
8	1 9.8	14 19 17.28	16 1 41.6	7.5	2.8	0.20
9	1 10.9	14 24 17.04	16 33 3.0	7.6	2.8	0.20
10	1 11.9	14 29 13.43	17 3 25.5	7.7	2.9	0.20
11	1 12.8	14 34 6.11	−17 32 47.1	7.8	2.9	0.21
12	1 13.7	14 38 54.67	18 1 5.0	7.9	3.0	0.21
13	1 14.4	14 43 38.64	18 28 16.6	8.0	3.0	0.21
14	1 15.1	14 48 17.47	18 54 18.9	6.1	3.1	0.21
15	1 15.7	14 52 50.56	19 19 8.6	8.2	3.1	0.22
16	1 16.3	14 57 17.20	−19 42 42.4	8.3	3.2	0.22
17	1 16.7	15 1 36.57	20 4 56.6	8.5	3.2	0.23
18	1 16.9	15 5 47.72	20 25 47.2	8.6	3.3	0.23
19	1 17.0	15 9 49.63	20 45 9.5	8.8	3.4	0.24
20	1 16.9	15 13 41.12	21 2 58.4	9.0	3.4	0.24
21	1 16.5	15 17 20.83	−21 19 8.4	9.2	3.5	0.25
22	1 16.0	15 20 47.26	21 33 33.6	9.4	3.5	0.25
23	1 15.3	15 23 58.78	21 46 7.2	9.6	3.6	0.26
24	1 14.4	15 26 53.53	21 56 41.4	9.8	3.7	0.26
25	1 13.0	15 29 29.48	22 5 7.7	10.0	3.7	0.27
26	1 11.2	15 31 44.48	−22 11 16.8	10.3	3.8	0.28
27	1 9.2	15 33 36.13	22 14 58.3	10.5	3.9	0.28
28	1 6.7	15 35 1.98	22 16 0.8	10.7	4.0	0.29
29	1 3,7	15 35 59.49	22 14 11.7	11.0	4.1	0.30
30	1 0.3	15 36 26.11	22 9 17.8	11.2	4.2	0.30
31	0 56.3	15 36 19.43	−22 1 5.4	11.5	4.3	0.31
Nov. 1	0 51.6	15 35 37.34	21 49 20.7	11.7	4.4	0.31
2	0 46.3	15 34 18.22	21 33 51.3	11.9	4.5	0.32
3	0 40.5	15 32 21.16	21 14 26.6	12.1	4.6	0.32
4	0 34.0	15 29 46.28	20 51 0.3	12.4	4.7	0.33
5	0 26.8	15 26 34.91	−20 23 32.5	12.6	4.7	0.34
6	0 19.1	15 22 49.98	19 52 11.4	12.8	4.8	0.34
7	0 11.0	15 18 36.00	19 17 16.6	12.9	4.9	0.35
8	0 2.6	15 13 59.27	18 39 20.0	12.9	5.0	0.35
8	23 53.7	15 9 7.58	17 59 8.0	13.0	5.0	0.35
9	23 44.8	15 4 9.89	−17 17 37.6	13.0	5.0	0.34
10	23 35.9	14 59 15.73	16 35 56.7	12.9	4.9	0.34
11	23 27.4	14 54 34.72	15 55 17.3	12.9	4.9	0.34
12	23 19.2	14 50 15.77	15 16 50.2	12.8	4.8	0.33
13	23 11.4	14 46 26.51	14 41 41.2	12.6	4.8	0.33
14	23 4.2	14 43 12.98	−14 10 43.4	12.3	4.7	0.32
15	22 57.8	14 40 39.44	−13 44 36.9	12.0	4.6	0.31
Nov. 15	22 57.8	14 40 39.44	−13 44 36.9	12.0	4.6	0.31
16	22 52.0	14 38 48.27	13 23 46.6	11.6	4.4	0.30
17	22 46.9	14 37 40.24	13 8 22.0	11.3	4.3	0.29
18	22 42.6	14 37 14.79	12 58 21.3	11.0	4.2	0.28
19	22 38.9	14 37 30.31	12 53 32.1	10.6	4.0	0.28
20	22 35.9	14 38 24.45	−12 53 34.5	10.3	3.9	0.27
21	22 33.4	14 39 54.39	12 58 3.8	10.0	3.8	0.26
22	22 31.5	14 41 57.06	13 6 32.8	9.8	3.7	0.25
23	22 30.1	14 44 29.39	13 18 32.8	9.5	3.6	0.25
24	22 29.2	14 47 28.40	13 33 36.3	9.3	3.5	0.24
25	22 28.6	14 50 51.17	−13 51 16.7	9.0	3.4	0.24
26	22 28.5	14 54 35.08	14 11 8.8	8.8	3.3	0.23
27	22 28.6	14 58 37.73	14 32 49.3	8.6	3.2	0.23
28	22 28.9	15 2 57.00	14 55 57.9	8.4	3.2	0.22
29	22 29.5	15 7 30.96	15 20 15.6	8.2	3.1	0.22
30	22 30.4	15 12 17.95	−15 45 25.9	8.0	3.1	0.21
Dec. 1	22 31.4	15 17 16.51	16 11 14.2	7.9	3.0	0.21
2	22 32.6	15 22 25.32	16 37 27.0	7.8	3.0	0.21
3	22 34.0	15 27 43.31	17 3 53.1	7.7	2.9	0.20
4	22 35.5	15 33 9.53	17 30 22.2	7.5	2.9	0.20
5	22 37.2	15 38 43.15	−17 56 45.6	7.4	2.8	0.19
6	22 39.0	15 44 23.44	18 22 55.3	7.3	2.8	0.19
7	22 40.8	15 50 9.82	18 48 44.5	7.2	2.8	0.19
8	22 42.7	15 56 1.76	19 14 7.0	7.1	2.7	0.19
9	22 44.6	16 1 58.80	19 38 57.5	7.0	2.7	0.18
10	22 46.6	16 8 0.58	−20 3 11.2	7.0	2.6	0.18
11	22 48.8	16 14 6.75	20 26 43.4	6.9	2.6	0.18
12	22 51.0	16 20 16.99	20 49 30.4	6.8	2.6	0.18
13	22 53.3	16 26 31.09	21 11 29.0	6.8	2.6	0.18
14	22 55.6	16 32 48.80	21 32 36.0	6.7	2.5	0.18
15	22 58.0	16 39 9.94	−21 52 48.0	6.7	2.5	0.18
16	23 0.5	16 45 34.33	22 12 2.7	6.6	2.5	0.18
17	23 3.0	16 52 1.83	22 30 17.6	6.6	2.5	0.18
18	23 5.6	16 58 32.30	22 47 30.4	6.5	2.5	0.18
19	23 8.2	17 5 5.59	23 3 39.0	6.5	2.4	0.17
20	23 10.8	17 11 41.60	−23 18 41.5	6.4	2.4	0.17
21	23 13.5	17 18 20.22	23 32 36.0	6.4	2.4	0.17
22	23 16.3	17 25 1.34	23 45 20.9	6.4	2.4	0.17
23	23 19.0	17 31 44.85	23 56 54.1	6.3	2.4	0.17
24	23 21.8	17 38 30.66	24 7 14.2	6.3	2.4	0.17
25	23 24.7	17 45 18.67	−24 16 19.7	6.3	2.4	0.17
26	23 27.6	17 52 8.78	24 24 9.2	6.2	2.3	0.17
27	23 30.5	17 59 0.88	24 30 41.0	6.2	2.3	0.17
28	23 33.4	18 5 54.87	24 35 54.1	6.2	2.3	0.17
29	23 36.4	18 12 50.67	24 39 47.1	6.2	2.3	0.17
30	23 39.4	18 19 48.19	−24 42 18.7	6.2	2.3	0.17
31	23 42.4	18 26 47.31	−24 43 27.7	6.2	2.3	0.17

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	3 6.8	21 48 46.31	−13 32 53.3	18.2	17.5	1.20	Feb. 15	0 6.9	21 49 34.79	−4 11 24.4	32.3	31.2	2.09
1	3 5.6	21 51 25.24	13 10 15.5	18.5	17.8	1.21	16	0 0.5	21 47 9.27	4 19 42.6	32.3	31.2	2.09
2	3 4.2	21 53 59.21	12 47 38.8	18.8	18.1	1.23	16	23 54.2	21 44 45.42	4 28 47.6	32.2	31.1	2.08
3	3 2.8	21 56 28.08	12 25 4.8	19.1	18.4	1.24	17	23 47.9	21 42 24.21	4 38 34.7	32.1	31.1	2.08
4	3 1.2	21 58 51.71	12 2 35.0	19.4	18.7	1.26	18	23 41.7	21 40 6.53	4 48 59.4	32.0	30.9	2.07
5	2 59.6	22 1 9.94	−11 40 10.3	19.6	18.9	1.28	19	23 35.6	21 37 53.24	−4 59 57.2	31.9	30.8	2.06
6	2 57.8	22 3 22.64	11 17 52.9	19.9	19.2	1.30	20	23 29.5	21 35 45.23	5 11 22.3	31.7	30.7	2.05
7	2 56.0	22 5 29.62	10 55 43.8	20.2	19.5	1.32	21	23 23.5	21 33 43.25	5 23 10.0	31.5	30.5	2.03
8	2 54.1	22 7 30.70	10 33 44.9	20.5	19.8	1.34	22	23 17.6	21 31 48.01	5 35 15.0	31.2	30.3	2.02
9	2 52.1	22 9 25.72	10 11 57.5	20.9	20.1	1.36	23	23 12.0	21 30 0.18	5 47 32.6	31.0	30.0	2.00
10	2 50.0	22 11 14.46	− 9 50 23.7	21.2	20.5	1.38	24	23 6.4	21 28 20.32	−5 59 57.9	30.7	29.6	1.99
11	2 47.7	22 12 56.75	9 29 5.2	21.5	20.8	1.40	25	23 0.9	21 26 48.89	6 12 26.1	30.4	29.3	1.97
12	2 45.4	22 14 32.36	9 8 4.0	21.9	21.2	1.42	26	22 55.6	21 25 26.31	6 24 52.8	30.0	29.0	1.95
13	2 43.0	22 16 1.10	8 47 21.8	22.2	21.5	1.44	27	22 50.5	21 24 12.90	6 37 14.3	29.7	28.6	1.92
14	2 40.5	22 17 22.75	8 27 0.6	22.5	21.9	1.47	28	22 45.5	21 23 8.92	6 49 26.6	29.3	28.3	1.90
15	2 37.7	22 18 37.11	− 8 7 2.5	22.9	22.2	1.49	Mar. 1	22 40.6	21 22 14.55	−7 1 25.7	28.9	28.0	1.88
16	2 34.9	22 19 43.95	7 47 29.7	23.3	22.5	1.51	2	22 36.0	21 21 29.91	7 13 9.1	28.5	27.6	1.86
17	2 32.0	22 20 43.09	7 28 24.3	23.7	22.9	1.53	3	22 31.5	21 20 55.09	7 24 33.3	28.1	27.2	1.83
18	2 29.0	22 21 34.30	7 9 48.6	24.0	23.2	1.55	4	22 27.2	21 20 30.09	7 35 36.0	27.7	26.8	1.81
19	2 25.7	22 22 17.40	6 51 44.6	24.4	23.6	1.58	5	22 23.1	21 20 14.89	7 46 14.5	27.3	26.4	1.78
20	2 22.4	22 22 52.16	− 6 34 14.7	24.8	24.0	1.60	6	22 19.0	21 20 9.37	−7 56 27.1	27.0	26.0	1.76
21	2 18.9	22 23 18.42	6 17 21.1	25.2	24.4	1.62	7	22 15.1	21 20 13.44	8 6 11.6	26.6	25.6	1.73
22	2 15.3	22 23 36.01	6 1 6.2	25.6	24.8	1.65	8	22 11.3	21 20 26.94	8 15 26.2	26.2	25.2	1.71
23	2 11.4	22 23 44.81	5 45 32.4	26.0	25.1	1.67	9	22 7.8	21 20 49.72	8 24 9.7	25.8	24.9	1.68
24	2 7.5	22 23 44.68	5 30 42.3	26.4	25.5	1.70	10	22 4.3	21 21 21.56	8 32 20.7	25.4	24.5	1.66
25	2 3.4	22 23 35.50	− 5 16 38.2	26.8	25.9	1.72	11	22 1.0	21 22 2.26	−8 39 58.1	25.0	24.1	1.63
26	1 59.1	22 23 17.18	5 3 22.5	27.2	26.3	1.75	12	21 57.9	21 22 51.58	8 47 0.9	24.6	23.7	1.60
27	1 54.7	22 22 49.65	4 50 57.4	27.6	26.6	1.77	13	21 54.9	21 23 49.31	8 53 28.0	24.2	23.3	1.58
28	1 50.2	22 22 12.87	4 39 25.4	28.0	27.0	1.80	14	21 52.1	21 24 55.19	8 59 18.9	23.8	23.0	1.55
29	1 45.4	22 21 26.91	4 28 48.6	28.3	27.4	1.82	15	21 49.5	21 26 8.98	9 4 32.9	23.4	22.6	1.53
30	1 40.6	22 20 31.83	− 4 19 9.4	28.7	27.7	1.85	16	21 46.9	21 27 30.42	−9 9 9.6	23.0	22.2	1.50
31	1 35.6	22 19 27.73	4 10 29.7	29.1	28.1	1.87	17	21 44.4	21 28 59.27	9 13 8.5	22.6	21.9	1.48
Feb. 1	1 30.4	22 18 14.74	4 2 51.6	29.4	28.4	1.89	18	21 42.0	21 30 35.25	9 16 29.3	22.2	21.5	1.45
2	1 25.1	22 16 53.09	3 56 16.7	29.8	28.8	1.92	19	21 39.9	21 32 18.11	9 19 11.4	21.9	21.2	1.43
3	1 19.7	22 15 23.06	3 50 47.0	30.1	29.1	1.94	20	21 37.8	21 34 7.59	9 21 15.0	21.5	20.8	1.40
4	1 14.2	22 13 44.95	− 3 46 23.6	30.4	29.4	1.96	21	21 35.7	21 36 3.45	−9 22 39.9	21.2	20.5	1.38
5	1 8.5	22 11 59.18	3 43 7.6	30.8	29.7	1.98	22	21 33.8	21 38 5.43	9 23 25.8	20.9	20.2	1.36
6	1 2.7	22 10 6.21	3 40 59.4	31.1	29.9	2.00	23	21 32.0	21 40 13.28	9 23 32.9	20.5	19.8	1.34
7	0 56.8	22 8 6.56	3 39 59.9	31.3	30.2	2.01	24	21 30.4	21 42 26.75	9 23 1.4	20.2	19.5	1.32
8	0 50.6	22 6 0.85	3 40 9.0	31.6	30.4	2.03	25	21 28.8	21 44 45.62	9 21 51.1	19.9	19.2	1.30
9	0 44.7	22 3 49.77	− 3 41 25.7	31.8	30.6	2.05	26	21 27.2	21 47 9.62	−9 20 2.3	19.6	18.9	1.28
10	0 38.5	22 1 34.04	3 43 49.2	31.9	30.8	2.06	27	21 25.7	21 49 38.53	9 17 35.4	19.3	18.6	1.26
11	0 32.3	21 59 14.45	3 47 18.6	32.1	31.0	2.07	28	21 24.3	21 52 12.10	9 14 30.8	19.0	18.3	1.24
12	0 25.9	21 56 51.81	3 51 51.3	32.2	31.1	2.08	29	21 23.0	21 54 50.14	9 10 48.7	18.7	18.1	1.22
13	0 19.6	21 54 27.01	3 57 25.3	32.2	31.1	2.08	30	21 21.9	21 57 32.43	9 6 29.7	18.4	17.8	1.20
14	0 13.2	21 52 1.01	− 4 3 57.5	32.3	31.2	2.09	31	21 20.7	22 0 18.78	−9 1 33.9	18.1	17.5	1.18
15	0 6.9	21 49 34.79	− 4 11 24.4	32.3	31.2	2.09	32	21 19.6	22 3 8.97	−8 56 2.0	17.8	17.2	1.16

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Apr. 1	21 19.6	22 3 8.97	–8 56 2.0	17.8	17.2	1.16
2	21 18.5	22 6 2.80	8 49 54.4	17.6	17.0	1.14
3	21 17.5	22 9 0.08	8 43 11.7	17.3	16.7	1.13
4	21 16.6	22 12 0.66	8 35 54.3	17.1	16.5	1.11
5	21 15.7	22 15 4.35	8 28 2.9	16.8	16.2	1.10
6	21 14.8	22 18 11.03	–8 19 37.9	16.6	16.0	1.08
7	21 14.1	22 21 20.54	8 10 39.9	16.4	15.7	1.07
8	21 13.4	22 24 32.72	8 1 9.4	16.1	15.5	1.05
9	21 12.7	22 27 47.45	7 51 7.1	15.9	15.3	1.04
10	21 12.0	22 31 4.58	7 40 33.4	15.7	15.1	1.02
11	21 11.3	22 34 24.01	–7 29 28.9	15.5	14.9	1.01
12	21 10.7	22 37 45.63	7 17 54.2	15.3	14.7	0.99
13	21 10.1	22 41 9.34	7 5 49.8	15.0	14.6	0.98
14	21 9.7	22 44 35.03	6 53 16.2	14.8	14.4	0.96
15	21 9.1	22 48 2.62	6 40 14.0	14.6	14.2	0.95
16	21 8.6	22 51 32.02	–6 26 43.8	14.4	14.0	0.94
17	21 8.2	22 55 3.15	6 12 46.3	14.2	13.8	0.92
18	21 7.8	22 58 35.93	5 58 21.9	14.1	13.7	0.91
19	21 7.4	23 2 10.28	5 43 31.3	13.9	13.5	0.90
20	21 7.1	23 5 46.14	5 28 15.1	13.7	13.3	0.89
21	21 6.8	23 9 23.42	–5 12 34.0	13.6	13.1	0.88
22	21 6.5	23 13 2.09	4 56 28.5	13.4	13.0	0.87
23	21 6.3	23 16 42.08	4 39 59.3	13.3	12.8	0.86
24	21 6.1	23 20 23.31	4 23 7.2	13.1	12.7	0.85
25	21 5.9	23 24 5.75	4 5 52.8	13.0	12.5	0.84
26	21 5.7	23 27 49.34	–3 48 16.8	12.8	12.4	0.83
27	21 5.5	23 31 34.04	3 30 19.9	12.7	12.2	0.82
28	21 5.3	23 35 19.78	3 12 2.8	12.5	12.1	0.81
29	21 5.1	23 39 6.53	2 53 26.3	12.4	11.9	0.80
30	21 5.0	23 42 54.26	2 34 31.1	12.2	11.8	0.79
May 1	21 4.8	23 46 42.92	–2 15 17.9	12.1	11.7	0.78
2	21 4.7	23 50 32.48	1 55 47.5	11.9	11.6	0.77
3	21 4.6	23 54 22.91	1 36 0.7	11.8	11.4	0.76
4	21 4.5	23 58 14.21	1 15 58.2	11.7	11.3	0.76
5	21 4.4	0 2 6.33	0 55 40.7	11.6	11.2	0.75
6	21 4.4	0 5 59.24	–0 35 8.9	11.4	11.1	0.74
7	21 4.4	0 9 52.95	–0 14 23.4	11.3	11.0	0.73
8	21 4.3	0 13 47.44	+0 6 35.0	11.2	10.8	0.73
9	21 4.3	0 17 42.69	0 27 45.6	11.1	10.7	0.72
10	21 4.3	0 21 38.69	0 49 7.7	11.0	10.6	0.71
11	21 4.3	0 25 35.45	+1 10 40.6	10.9	10.5	0.71
12	21 4.3	0 29 32.97	1 32 23.7	10.8	10.4	0.70
13	21 4.4	0 33 31.23	1 54 16.3	10.7	10.4	0.69
14	21 4.4	0 37 30.25	2 16 17.7	10.6	10.3	0.69
15	21 4.4	0 41 30.02	2 38 27.2	10.5	10.2	0.68
16	21 4.5	0 45 30.55	+3 0 44.2	10.4	10.1	0.68
17	21 4.6	0 49 31.85	+3 23 8.0	10.3	10.0	0.67
May 17	21 4.6	0 49 31.85	+ 3 23 8.0	10.3	10.0	0.67
18	21 4.7	0 53 33.94	3 45 38.0	10.2	9.9	0.66
19	21 4.8	0 57 36.81	4 8 13.4	10.1	9.8	0.66
20	21 4.9	1 1 40.48	4 30 53.6	10.0	9.7	0.65
21	21 5.0	1 5 44.96	4 53 37.8	9.9	9.6	0.64
22	21 5.1	1 9 50.25	+ 5 16 25.5	9.8	9.5	0.64
23	21 5.2	1 13 56.37	5 39 15.8	9.8	9.5	0.63
24	21 5.4	1 18 3.31	6 2 7.9	9.7	9.4	0.63
25	21 5.6	1 22 11.10	6 25 1.2	9.6	9.3	0.62
26	21 5.8	1 26 19.75	6 47 55.0	9.5	9.2	0.62
27	21 6.0	1 30 29.27	+ 7 10 48.5	9.4	9.1	0.61
28	21 6.2	1 34 39.66	7 33 41.0	9.4	9.1	0.61
29	21 6.4	1 38 50.94	7 56 31.7	9.3	9.0	0.60
30	21 6.7	1 43 3.12	8 19 19.8	9.2	8.9	0.60
31	21 7.1	1 47 16.21	8 42 4.6	9.1	8.8	0.60
June 1	21 7.4	1 51 30.22	+ 9 4 45.5	9.1	8.8	0.59
2	21 7.7	1 55 45.17	9 27 21.7	9.0	8.7	0.59
3	21 8.0	2 0 1.07	9 49 52.5	9.0	8.6	0.58
4	21 8.3	2 4 17.93	10 12 17.0	8.9	8.6	0.58
5	21 8.7	2 8 35.76	10 34 34.5	8.8	8.5	0.58
6	21 9.1	2 12 54.59	+10 56 44.5	8.8	8.4	0.57
7	21 9.5	2 17 14.42	11 18 46.3	8.7	8.4	0.57
8	21 9.9	2 21 35.27	11 40 39.0	8.7	8.3	0.57
9	21 10.3	2 25 57.15	12 2 21.9	8.6	8.2	0.56
10	21 10.7	2 30 20.07	12 23 54.4	8.6	8.2	0.56
11	21 11.2	2 34 44.06	+12 45 15.8	8.5	8.1	0.56
12	21 11.6	2 39 9.13	13 6 25.3	8.4	8.1	0.56
13	21 12.1	2 43 35.31	13 27 22.2	8.4	8.0	0.55
14	21 12.6	2 48 2.62	13 48 6.0	8.3	8.0	0.55
15	21 13.1	2 52 31.06	14 8 35.9	8.3	7.9	0.55
16	21 13.6	2 57 0.65	+14 28 51.2	8.2	7.9	0.54
17	21 14.2	3 1 31.41	14 48 51.2	8.1	7.8	0.54
18	21 14.8	3 6 3.35	15 8 35.2	8.1	7.8	0.54
19	21 15.4	3 10 36.48	15 28 2.5	8.0	7.7	0.53
20	21 16.0	3 15 10.79	15 47 12.3	8.0	7.7	0.53
21	21 16.7	3 19 46.31	+16 6 3.9	7.9	7.6	0.53
22	21 17.4	3 24 23.05	16 24 36.6	7.8	7.6	0.53
23	21 18.1	3 29 1.00	16 42 49.7	7.8	7.5	0.52
24	21 18.8	3 33 40.16	17 0 42.5	7.7	7.5	0.52
25	21 19.6	3 38 20.54	17 18 14.2	7.7	7.5	0.52
26	21 20.3	3 43 2.13	+17 35 24.2	7.6	7.4	0.52
27	21 21.1	3 47 44.92	17 52 11.6	7.6	7.4	0.51
28	21 21.8	3 52 28.92	18 8 35.9	7.5	7.3	0.51
29	21 22.6	3 57 14.12	18 24 36.4	7.5	7.3	0.51
30	21 23.2	4 2 0.50	18 40 12.4	7.5	7.3	0.51
31	21 24.3	4 6 48.06	+18 55 23.3	7.4	7.2	0.51
32	21 25.2	4 11 36.79	+19 10 8.3	7.4	7.2	0.50

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	21 24.3	4 6 48.06	+18 55 23.3	7.4	7.2	0.51	Aug. 16	22 16.4	8 0 27.54	+20 40 0.8	6.0	5.8	0.42
2	21 25.2	4 11 36.79	19 10 8.3	7.4	7.2	0.50	17	22 17.6	8 5 34.00	20 27 57.3	6.0	5.8	0.41
3	21 26.1	4 16 26.67	19 24 26.6	7.3	7.1	0.50	18	22 18.8	8 10 39.87	20 15 18.3	6.0	5.8	0.41
4	21 27.0	4 21 17.69	19 38 17.7	7.3	7.1	0.50	19	22 20.0	8 15 45.10	20 2 4.3	6.0	5.8	0.41
5	21 28.0	4 26 9.81	19 51 41.1	7.3	7.0	0.50	20	22 21.1	8 20 49.66	19 48 15.6	6.0	5.8	0.41
6	21 28.9	4 31 3.03	+20 4 36.1	7.2	7.0	0.50	21	22 22.2	8 25 53.53	+19 33 52.7	5.9	5.7	0.41
7	21 29.9	4 35 57.35	20 17 2.1	7.2	7.0	0.49	22	22 23.3	8 30 56.68	19 18 55.9	5.9	5.7	0.40
8	21 30.8	4 40 52.73	20 28 58.5	7.1	6.9	0.49	23	22 24.4	8 35 59.09	19 3 25.7	5.9	5.7	0.40
9	21 31.8	4 45 49.15	20 40 24.8	7.1	6.9	0.49	24	22 25.5	8 41 0.73	18 47 22.5	5.9	5.7	0.40
10	21 32.8	4 50 46.58	20 51 20.4	7.1	6.9	0.49	25	22 26.6	8 46 1.59	18 30 47.0	5.9	5.7	0.40
11	21 33.8	4 55 45.01	+21 1 44.8	7.0	6.8	0.49	26	22 27.6	8 51 1.64	+18 13 39.6	5.9	5.6	0.40
12	21 34.8	5 0 44.41	21 11 37.3	7.0	6.8	0.48	27	22 28.7	8 56 0.87	17 56 0.9	5.8	5.6	0.40
13	21 35.9	5 5 44.76	21 20 57.7	6.9	6.7	0.48	28	22 29.7	9 0 59.25	17 37 51.4	5.8	5.6	0.39
14	21 37.0	5 10 46.02	21 29 45.2	6.9	6.7	0.48	29	22 30.7	9 5 56.80	17 19 11.7	5.8	5.6	0.39
15	21 38.1	5 15 48.16	21 37 59.7	6.9	6.7	0.48	30	22 31.7	9 10 53.48	17 0 2.3	5.8	5.6	0.39
16	21 39.2	5 20 51.16	+21 45 40.1	6.8	6.6	0.48	31	22 32.7	9 15 49.30	+16 40 23.9	5.8	5.6	0.39
17	21 40.3	5 25 54.98	21 52 46.5	6.8	6.6	0.47	Sept. 1	22 33.6	9 20 44.24	16 20 17.1	5.8	5.6	0.39
18	21 41.4	5 30 59.58	21 59 18.4	6.8	6.6	0.47	2	22 34.6	9 25 38.28	15 59 42.5	5.7	5.5	0.39
19	21 42.6	5 36 4.94	22 5 15.2	6.8	6.5	0.47	3	22 35.5	9 30 31.44	15 38 40.6	5.7	5.5	0.38
20	21 43.7	5 41 11.02	22 10 36.7	6.7	6.5	0.47	4	22 36.5	9 35 23.72	15 17 12.1	5.7	5.5	0.38
21	21 44.9	5 46 17.77	+22 15 22.4	6.7	6.5	0.47	5	22 37.4	9 40 15.12	+14 55 17.7	5.7	5.5	0.38
22	21 46.0	5 51 25.15	22 19 32.0	6.7	6.5	0.46	6	22 38.3	9 45 5.66	14 32 58.0	5.7	5.5	0.38
23	21 47.2	5 56 33.10	22 23 5.2	6.6	6.4	0.46	7	22 39.2	9 49 55.33	14 10 13.5	5.7	5.5	0.38
24	21 48.4	6 1 41.59	22 26 1.6	6.6	6.4	0.46	8	22 40.1	9 54 44.14	13 47 5.1	5.7	5.5	0.38
25	21 49.7	6 6 50.56	22 28 20.9	6.6	6.4	0.46	9	22 40.9	9 59 32.12	13 23 33.3	5.6	5.4	0.37
26	21 50.9	6 11 59.95	+22 30 3.0	6.5	6.4	0.46	10	22 41.8	10 4 19.27	+12 59 38.9	5.6	5.4	0.37
27	21 52.2	6 17 9.73	22 31 7.7	6.5	6.3	0.45	11	22 42.6	10 9 5.60	12 35 22.3	5.6	5.4	0.37
28	21 53.4	6 22 19.85	22 31 34.6	6.5	6.3	0.45	12	22 43.4	10 13 51.14	12 10 44.3	5.6	5.4	0.37
29	21 54.6	6 27 30.24	22 31 23.6	6.5	6.3	0.45	13	22 44.2	10 18 35.90	11 45 45.5	5.6	5.4	0.37
30	21 55.8	6 32 40.86	22 30 34.5	6.4	6.2	0.45	14	22 45.0	10 23 19.91	11 20 26.7	5.6	5.4	0.37
31	21 57.1	6 37 51.65	+22 29 7.4	6.4	6.2	0.45	15	22 45.8	10 28 3.19	+10 54 48.5	5.6	5.4	0.37
Aug. 1	21 58.3	6 43 2.56	22 27 2.1	6.4	6.2	0.44	16	22 46.6	10 32 45.77	10 28 51.5	5.6	5.4	0.36
2	21 59.5	6 48 13.54	22 24 18.7	6.4	6.1	0.44	17	22 47.3	10 37 27.67	10 2 36.7	5.5	5.4	0.36
3	22 0.7	6 53 24.54	22 20 57.0	6.3	6.1	0.44	18	22 48.0	10 42 8.91	9 36 4.5	5.5	5.3	0.36
4	22 2.0	6 58 35.50	22 16 57.2	6.3	6.1	0.44	19	22 48.7	10 46 49.51	9 9 15.7	5.5	5.3	0.36
5	22 3.2	7 3 46.37	+22 12 19.4	6.3	6.1	0.44	20	22 49.4	10 51 29.52	+ 8 42 10.8	5.5	5.3	0.36
6	22 4.4	7 8 57.12	22 7 3.4	6.3	6.0	0.43	21	22 50.1	10 56 8.95	8 14 50.7	5.5	5.3	0.36
7	22 5.6	7 14 7.68	22 1 9.4	6.2	6.0	0.43	22	22 50.8	11 0 47.83	7 47 16.1	5.5	5.3	0.36
8	22 6.9	7 19 18.02	21 54 37.5	6.2	6.0	0.43	23	22 51.5	11 5 26.19	7 19 27.7	5.5	5.3	0.36
9	22 8.1	7 24 28.08	21 47 27.8	6.2	6.0	0.43	24	22 52.2	11 10 4.05	6 51 26.2	5.5	5.3	0.36
10	22 9.3	7 29 37.84	+21 39 40.6	6.2	6.0	0.43	25	22 52.9	11 14 41.47	+ 6 23 12.4	5.5	5.3	0.35
11	22 10.5	7 34 47.24	21 31 16.1	6.1	5.9	0.42	26	22 53.6	11 19 18.45	5 54 46.9	5.5	5.3	0.35
12	22 11.7	7 39 56.24	21 22 14.4	6.1	5.9	0.42	27	22 54.2	11 23 55.04	5 26 10.6	5.5	5.3	0.35
13	22 12.9	7 45 4.80	21 12 35.8	6.1	5.9	0.42	28	22 54.9	11 28 31.27	4 57 24.2	5.4	5.2	0.35
14	22 14.1	7 50 12.90	21 2 20.4	6.1	5.9	0.42	29	22 55.5	11 33 7.16	4 28 28.3	5.4	5.2	0.35
15	22 15.3	7 55 20.49	+20 51 28.7	6.1	5.9	0.42	30	22 56.2	11 37 42.75	+ 3 59 23.8	5.4	5.2	0.35
16	22 16.4	8 0 27.54	+20 40 0.8	6.0	5.8	0.42	31	22 56.8	11 42 18.08	+ 3 30 11.4	5.4	5.2	0.35

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	22 56.8	11 42 18.08	+ 3 30 11.4	5.4	5.2	0.35	Nov. 16	23 32.8	15 19 44.70	−17 40 20.9	5.2	5.0	0.35
2	22 57.5	11 46 53.19	3 0 51.8	5.4	5.2	0.35	17	23 34.0	15 24 49.27	18 1 30.3	5.2	5.0	0.35
3	22 58.1	11 51 28.11	2 31 25.8	5.4	5.2	0.35	18	23 35.2	15 29 55.08	18 22 10.6	5.2	5.0	0.35
4	22 58.9	11 56 2.87	2 1 54.1	5.4	5.2	0.35	19	23 36.4	15 35 2.12	18 42 20.9	5.2	5.0	0.35
5	22 59.4	12 0 37.52	1 32 17.4	5.4	5.2	0.35	20	23 37.6	15 40 10.40	19 2 0.5	5.2	5.0	0.35
6	23 0.0	12 5 12.09	+ 1 2 36.4	5.4	5.2	0.35	21	23 38.8	15 45 19.91	−19 21 8.6	5.2	5.0	0.35
7	23 0.6	12 9 46.61	0 32 51.9	5.4	5.2	0.35	22	23 40.0	15 50 30.66	19 39 44.4	5.2	5.0	0.35
8	23 1.3	12 14 21.14	+ 0 3 4.5	5.4	5.2	0.34	23	23 41.2	15 55 42.61	19 57 47.3	5.2	5.0	0.35
9	23 1.9	12 18 55.71	− 0 26 44.7	5.3	5.2	0.34	24	23 42.5	16 0 55.76	20 15 16.4	5.2	5.0	0.35
10	23 2.6	12 23 30.37	0 56 35.4	5.3	5.2	0.34	25	23 43.8	16 6 10.10	20 32 10.8	5.2	5.0	0.35
11	23 3.2	12 28 5.15	− 1 26 26.6	5.3	5.1	0.34	26	23 45.1	16 11 25.60	−20 48 30.2	5.2	5.0	0.36
12	23 3.9	12 32 40.10	1 56 17.7	5.3	5.1	0.34	27	23 46.4	16 16 42.24	21 4 13.7	5.2	5.0	0.36
13	23 4.5	12 37 15.27	2 26 8.0	5.3	5.1	0.34	28	23 47.8	16 21 59.97	21 19 20.6	5.2	5.0	0.36
14	23 5.1	12 41 50.70	2 55 56.7	5.3	5.1	0.34	29	23 49.1	16 27 18.79	21 33 50.3	5.2	5.0	0.36
15	23 5.7	12 46 26.42	3 25 43.0	5.3	5.1	0.34	30	23 50.5	16 32 38.66	21 47 42.1	5.2	5.0	0.36
16	23 6.3	12 51 2.48	− 3 55 26.4	5.3	5.1	0.34	Dec. 1	23 51.9	16 37 59.55	−22 0 55.5	5.2	5.0	0.36
17	23 7.0	12 55 38.92	4 25 5.9	5.3	5.1	0.34	2	23 53.3	16 43 21.42	22 13 30.1	5.2	5.0	0.36
18	23 7.7	13 0 15.78	4 54 40.8	5.3	5.1	0.34	3	23 54.7	16 48 44.23	22 25 24.9	5.2	5.0	0.36
19	23 8.4	13 4 53.10	5 24 10.4	5.3	5.1	0.34	4	23 56.2	16 54 7.93	22 36 39.6	5.2	5.0	0.36
20	23 9.1	13 9 30.92	5 53 33.9	5.3	5.1	0.34	5	23 57.6	16 59 32.47	22 47 13.6	5.2	5.0	0.36
21	23 9.8	13 14 9.28	− 6 22 50.6	5.3	5.1	0.34	6	23 59.1	17 4 57.81	−22 57 6.4	5.2	5.0	0.36
22	23 10.5	13 18 48.23	6 51 59.7	5.3	5.1	0.34	8	0 0.6	17 10 23.90	23 6 17.6	5.2	5.0	0.36
23	23 11.3	13 23 27.79	7 21 0.3	5.3	5.1	0.34	9	0 2.1	17 15 50.71	23 14 46.8	5.2	5.0	0.36
24	23 12.0	13 28 8.00	7 49 51.7	5.3	5.1	0.34	10	0 3.6	17 21 18.18	23 22 33.6	5.2	5.0	0.36
25	23 12.8	13 32 48.90	8 18 33.1	5.2	5.1	0.34	11	0 5.1	17 26 46.27	23 29 37.6	5.2	5.0	0.36
26	23 13.5	13 37 30.53	− 8 47 3.6	5.2	5.1	0.34	12	0 6.6	17 32 14.90	−23 35 58.5	5.2	5.0	0.36
27	23 14.3	13 42 12.91	9 15 22.6	5.2	5.1	0.34	13	0 8.2	17 37 44.03	23 41 35.8	5.2	5.0	0.36
28	23 15.0	13 46 56.09	9 43 29.0	5.2	5.1	0.34	14	0 9.7	17 43 13.61	23 46 29.4	5.2	5.0	0.36
29	23 15.8	13 51 40.09	10 11 22.3	5.2	5.1	0.34	15	0 11.3	17 48 43.57	23 50 38.9	5.2	5.0	0.37
30	23 16.6	13 56 24.94	10 39 1.4	5.2	5.1	0.34	16	0 12.8	17 54 13.85	23 54 4.3	5.2	5.0	0.37
31	23 17.4	14 1 10.66	−11 6 25.6	5.2	5.0	0.34	17	0 14.4	17 59 44.39	−23 56 45.2	5.2	5.0	0.37
Nov. 1	23 18.2	14 5 57.30	11 33 34.1	5.2	5.0	0.34	18	0 15.9	18 5 15.12	23 58 41.6	5.2	5.0	0.37
2	23 19.1	14 10 44.88	12 0 26.3	5.2	5.0	0.34	19	0 17.5	18 10 45.98	23 59 53.2	5.2	5.0	0.37
3	23 19.9	14 15 33.45	12 27 1.2	5.2	5.0	0.34	20	0 19.0	18 16 16.91	24 0 20.1	5.2	5.0	0.37
4	23 20.8	14 20 23.04	12 53 18.1	5.2	5.0	0.34	21	0 20.6	18 21 47.84	24 0 2.1	5.2	5.0	0.37
5	23 21.7	14 25 13.67	−13 19 16.3	5.2	5.0	0.34	22	0 22.2	18 27 18.71	−23 58 59.3	5.2	5.0	0.37
6	23 22.6	14 30 5.34	13 44 54.7	5.2	5.0	0.34	23	0 23.8	18 32 49.46	23 57 11.5	5.2	5.0	0.37
7	23 23.5	14 34 58.09	14 10 12.4	5.2	5.0	0.34	24	0 25.4	18 38 20.00	23 54 39.0	5.2	5.0	0.37
8	23 24.5	14 39 51.94	14 35 9.0	5.2	5.0	0.34	25	0 26.9	18 43 50.27	23 51 21.9	5.2	5.0	0.37
9	23 25.5	14 44 46.91	14 59 43.5	5.2	5.0	0.35	26	0 28.5	18 49 20.21	23 47 20.2	5.2	5.0	0.37
10	23 26.5	14 49 43.02	−15 23 55.2	5.2	5.0	0.35	27	0 30.0	18 54 49.75	−23 42 34.0	5.2	5.0	0.37
11	23 27.5	14 54 40.29	15 47 43.3	5.2	5.0	0.35	28	0 31.6	19 0 18.83	23 37 3.7	5.2	5.0	0.37
12	23 28.5	14 59 38.75	16 11 6.9	5.2	5.0	0.35	29	0 33.1	19 5 47.39	23 30 49.6	5.2	5.0	0.37
13	23 29.5	15 4 38.41	16 34 5.3	5.2	5.0	0.35	30	0 34.6	19 11 15.36	23 23 51.7	5.2	5.0	0.37
14	23 30.6	15 9 39.28	16 56 37.6	5.2	5.0	0.35	31	0 36.1	19 16 42.67	23 16 10.5	5.2	5.1	0.37
15	23 31.7	15 14 41.38	−17 18 43.0	5.2	5.0	0.35	32	0 37.6	19 22 9.29	−23 7 46.2	5.2	5.1	0.37
16	23 32.8	15 19 44.70	−17 40 20.9	5.2	5.0	0.35	33	0 39.1	19 27 35.14	−22 58 39.3	5.2	5.1	0.37

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
July 1	17 44.0	0 25 50.50	−0 26 47.6	10.1	5.8	0.68	Aug. 16	16 11.2	1 54 8.80	+7 47 6.7	14.4	8.2	0.98
2	17 42.3	0 28 7.63	−0 13 18.3	10.2	5.9	0.69	17	16 8.6	1 55 30.26	7 54 8.3	14.5	8.3	0.99
3	17 40.7	0 30 24.08	+0 0 5.8	10.3	5.9	0.69	18	16 6.0	1 56 49.65	8 0 58.5	14.6	8.4	1.00
4	17 39.0	0 32 39.82	0 13 24.7	10.4	6.0	0.70	19	16 3.4	1 58 6.92	8 7 37.2	14.8	8.5	1.00
5	17 37.3	0 34 54.85	0 26 38.1	10.5	6.0	0.70	20	16 0.7	1 59 22.00	8 14 4.2	14.9	8.5	1.01
6	17 35.6	0 37 9.16	+0 39 45.6	10.5	6.0	0.70	21	15 57.9	2 0 34.83	+8 20 19.3	15.0	8.6	1.01
7	17 33.9	0 39 22.74	0 52 47.3	10.6	6.1	0.71	22	15 55.2	2 1 45.34	8 26 22.4	15.2	8.6	1.02
8	17 32.2	0 41 35.57	1 5 43.2	10.7	6.1	0.71	23	15 52.4	2 2 53.50	8 32 13.3	15.3	8.7	1.02
9	17 30.5	0 43 47.65	1 18 33.1	10.8	6.2	0.72	24	15 49.5	2 3 59.21	8 37 52.0	15.4	8.8	1.03
10	17 28.7	0 45 58.95	1 31 16.8	10.9	6.2	0.72	25	15 46.7	2 5 2.44	8 43 18.4	15.5	8.8	1.04
11	17 26.9	0 48 9.46	+1 43 54.2	10.9	6.3	0.73	26	15 43.8	2 6 3.12	+8 48 32.3	15.6	8.9	1.05
12	17 25.1	0 50 19.17	1 56 25.2	11.0	6.3	0.73	27	15 40.8	2 7 1.17	8 53 33.4	15.8	8.9	1.06
13	17 23.4	0 52 28.07	2 8 49.6	11.1	6.4	0.74	28	15 37.8	2 7 56.55	8 58 21.8	15.9	9.0	1.07
14	17 21.6	0 54 36.13	2 21 7.3	11.2	6.4	0.74	29	15 34.7	2 8 49.19	9 2 57.5	16.0	9.1	1.08
15	17 19.6	0 56 43.35	2 33 18.3	11.3	6.5	0.75	30	15 31.6	2 9 39.04	9 7 20.3	16.1	9.2	1.09
16	17 17.8	0 58 49.69	+2 45 22.3	11.3	6.5	0.75	31	15 28.5	2 10 26.05	+9 11 30.2	16.3	9.3	1.10
17	17 15.9	1 0 55.15	2 57 19.2	11.4	6.6	0.76	Sept. 1	15 25.3	2 11 10.17	9 15 27.2	16.4	9.3	1.11
18	17 14.2	1 2 59.70	3 9 8.8	11.5	6.6	0.76	2	15 22.0	2 11 51.35	9 19 11.3	16.6	9.4	1.12
19	17 12.3	1 5 3.32	3 20 51.0	11.6	6.7	0.77	3	15 18.7	2 12 29.56	9 22 42.5	16.7	9.5	1.13
20	17 10.4	1 7 5.97	3 32 25.6	11.7	6.7	0.78	4	15 15.4	2 13 4.75	9 26 0.9	16.9	9.6	1.14
21	17 8.5	1 9 7.62	+3 43 52.2	11.7	6.8	0.78	5	15 11.9	2 13 36.88	+9 29 6.3	17.1	9.7	1.15
22	17 6.6	1 11 8.25	3 55 10.9	11.8	6.8	0.79	6	15 8.5	2 14 5.88	9 31 58.7	17.2	9.7	1.16
23	17 4.6	1 13 7.82	4 6 21.5	11.9	6.9	0.79	7	15 5.0	2 14 31.72	9 34 38.2	17.3	9.8	1.17
24	17 2.7	1 15 6.30	4 17 23.7	12.0	6.9	0.80	8	15 1.5	2 14 54.38	9 37 4.8	17.4	9.9	1.17
25	17 0.7	1 17 3.67	4 28 17.3	12.1	7.0	0.80	9	14 57.9	2 15 13.82	9 39 18.4	17.6	10.0	1.18
26	16 58.7	1 18 59.87	+4 39 2.1	12.2	7.0	0.81	10	14 54.2	2 15 30.00	+9 41 19.1	17.7	10.0	1.19
27	16 56.6	1 20 54.87	4 49 37.9	12.3	7.1	0.82	11	14 50.5	2 15 42.89	9 43 6.8	17.9	10.1	1.20
28	16 54.6	1 22 48.65	5 0 4.6	12.4	7.1	0.82	12	14 46.7	2 15 52.44	9 44 41.5	18.0	10.2	1.21
29	16 52.6	1 24 41.16	5 10 22.1	12.5	7.2	0.83	13	14 42.9	2 15 58.64	9 46 3.2	18.1	10.3	1.22
30	16 50.5	1 26 32.36	5 20 30.1	12.6	7.2	0.84	14	14 39.0	2 16 1.45	9 47 11.9	18.2	10.4	1.23
31	16 48.3	1 28 22.22	+5 30 28.5	12.7	7.3	0.85	15	14 35.1	2 16 0.85	+9 48 7.5	18.4	10.4	1.24
Aug. 1	16 46.2	1 30 10.71	5 40 17.4	12.8	7.3	0.86	16	14 31.1	2 15 56.80	9 48 50.1	18.5	10.5	1.25
2	16 44.1	1 31 57.80	5 49 56.6	12.9	7.4	0.86	17	14 27.0	2 15 49.30	9 49 19.6	18.6	10.6	1.26
3	16 42.0	1 33 43.44	5 59 25.7	13.0	7.4	0.87	18	14 22.9	2 15 38.33	9 49 36.0	18.7	10.7	1.26
4	16 39.7	1 35 27.60	6 8 44.9	13.1	7.5	0.88	19	14 18.7	2 15 23.86	9 49 39.3	18.8	10.7	1.27
5	16 37.5	1 37 10.26	+6 17 54.0	13.2	7.5	0.88	20	14 14.5	2 15 5.90	+9 49 29.6	19.0	10.8	1.28
6	16 35.2	1 38 51.36	6 26 53.0	13.3	7.6	0.89	21	14 10.2	2 14 44.45	9 49 6.9	19.1	10.8	1.29
7	16 33.0	1 40 30.86	6 35 41.8	13.4	7.6	0.90	22	14 5.8	2 14 19.51	9 48 31.5	19.2	10.9	1.30
8	16 30.7	1 42 8.74	6 44 20.2	13.5	7.7	0.90	23	14 1.4	2 13 51.11	9 47 43.4	19.3	11.0	1.30
9	16 28.3	1 43 44.97	6 52 48.3	13.6	7.8	0.91	24	13 57.0	2 13 19.28	9 46 42.8	19.4	11.0	1.31
10	16 25.9	1 45 19.50	+7 1 5.9	13.7	7.9	0.92	25	13 52.5	2 12 44.06	+9 45 29.9	19.5	11.1	1.32
11	16 23.5	1 46 52.31	7 9 13.0	13.8	7.9	0.93	26	13 47.9	2 12 5.50	9 44 5.0	19.6	11.2	1.33
12	16 21.1	1 48 23.34	7 17 9.5	13.9	8.0	0.94	27	13 43.3	2 11 23.68	9 42 28.5	19.7	11.2	1.34
13	16 18.7	1 49 52.55	7 24 55.2	14.1	8.0	0.95	28	13 38.6	2 10 38.65	9 40 40.6	19.8	11.3	1.34
14	16 16.2	1 51 19.90	7 32 30.0	14.2	8.1	0.96	29	13 33.8	2 9 50.50	9 38 41.8	19.9	11.3	1.35
15	16 13.7	1 52 45.34	+7 39 53.9	14.3	8.1	0.97	30	13 29.1	2 8 59.33	+9 36 32.6	20.0	11.4	1.35
16	16 11.2	1 54 8.80	+7 47 6.7	14.4	8.2	0.98	Oct. 1	13 24.2	2 8 5.25	+9 34 13.3	20.1	11.4	1.36

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	13 24.2	2 8 5.25	+9 34 13.3	20.1	11.4	1.36	Nov. 16	9 35.5	1 20 8.67	+ 7 55 54.7	16.8	9.6	1.13
2	13 19.3	2 7 8.38	9 31 44.6	20.2	11.5	1.36	17	9 31.3	1 19 51.84	7 57 43.6	16.6	9.5	1.12
3	13 14.4	2 6 8.84	9 29 7.0	20.2	11.5	1.36	18	9 27.2	1 19 38.09	7 59 47.1	16.4	9.4	1.10
4	13 9.5	2 5 6.77	9 26 21.0	20.3	11.6	1.37	19	9 23.1	1 19 27.41	8 2 5.2	16.2	9.3	1.09
5	13 4.5	2 4 2.31	9 23 27.1	20.4	11.6	1.37	20	9 19.0	1 19 19.80	8 4 37.8	16.0	9.2	1.08
6	12 59.4	2 2 55.60	+9 20 26.0	20.4	11.6	1.37	21	9 15.0	1 19 15.26	+ 8 7 24.9	15.8	9.1	1.07
7	12 54.3	2 1 46.79	9 17 18.3	20.5	11.6	1.38	22	9 11.0	1 19 13.76	8 10 26.3	15.6	9.0	1.06
8	12 49.2	2 0 36.06	9 14 4.7	20.5	11.7	1.38	23	9 7.1	1 19 15.28	8 13 41.9	15.4	8.9	1.04
9	12 44.1	1 59 23.56	9 10 45.7	20.5	11.7	1.38	24	9 3.2	1 19 19.81	8 17 11.7	15.3	8.8	1.03
10	12 39.0	1 58 9.45	9 7 22.0	20.5	11.7	1.38	25	8 59.4	1 19 27.31	8 20 55.4	15.1	8.7	1.02
11	12 33.8	1 56 53.92	+9 3 54.4	20.5	11.7	1.38	26	8 55.7	1 19 37.76	+ 8 24 52.8	14.9	8.6	1.01
12	12 28.6	1 55 37.14	9 0 23.4	20.5	11.7	1.38	27	8 51.9	1 19 51.13	8 29 3.9	14.8	8.5	1.00
13	12 23.4	1 54 19.29	8 56 49.8	20.5	11.7	1.38	28	8 48.3	1 20 7.38	8 33 28.5	14.6	8.4	0.99
14	12 18.1	1 53 0.56	8 53 14.4	20.4	11.7	1.38	29	8 44.7	1 20 26.50	8 38 6.3	14.5	8.3	0.98
15	12 12.9	1 51 41.11	8 49 37.9	20.4	11.7	1.38	30	8 41.1	1 20 48.44	8 42 57.1	14.3	8.2	0.97
16	12 7.6	1 50 21.15	+8 46 0.7	20.4	11.7	1.38	Dec. 1	8 37.6	1 21 13.14	+ 8 48 0.6	14.2	8.1	0.96
17	12 2.4	1 49 0.83	8 42 23.8	20.4	11.7	1.38	2	8 34.1	1 21 40.56	8 53 16.4	14.0	8.0	0.95
18	11 57.1	1 47 40.37	8 38 47.9	20.4	11.7	1.38	3	8 30.7	1 22 10.65	8 58 44.5	13.9	7.9	0.94
19	11 51.8	1 46 19.94	8 35 13.9	20.3	11.6	1.37	4	8 27.3	1 22 43.35	9 4 24.3	13.7	7.8	0.93
20	11 46.5	1 44 59.75	8 31 42.5	20.3	11.6	1.37	5	8 24.0	1 23 18.68	9 10 15.6	13.6	7.7	0.92
21	11 41.3	1 43 39.98	+8 28 14.5	20.2	11.6	1.36	6	8 20.7	1 23 56.51	+ 9 16 18.1	13.4	7.6	0.91
22	11 36.0	1 42 20.83	8 24 50.9	20.2	11.5	1.36	7	8 17.4	1 24 36.82	9 22 31.5	13.3	7.6	0.90
23	11 30.7	1 41 2.49	8 21 32.6	20.1	11.5	1.35	8	8 14.2	1 25 19.54	9 28 55.3	13.1	7.5	0.89
24	11 25.5	1 39 45.15	8 18 20.1	20.0	11.4	1.35	9	8 11.0	1 26 4.64	9 35 29.4	13.0	7.4	0.88
25	11 20.3	1 38 29.00	8 15 14.4	19.9	11.3	1.34	10	8 7.9	1 26 52.06	9 42 13.2	12.8	7.3	0.87
26	11 15.1	1 37 14.20	+8 12 16.2	19.8	11.3	1.33	11	8 4.8	1 27 41.72	+ 9 49 6.6	12.7	7.2	0.86
27	11 10.0	1 36 0.93	8 9 26.3	19.7	11.2	1.33	12	8 1.7	1 28 33.59	9 56 9.2	12.5	7.2	0.85
28	11 4.9	1 34 49.37	8 6 45.6	19.6	11.2	1.32	13	7 58.7	1 29 27.64	10 3 20.7	12.4	7.1	0.84
29	10 59.8	1 33 39.67	8 4 14.7	19.5	11.1	1.32	14	7 55.7	1 30 23.81	10 10 40.7	12.2	7.0	0.83
30	10 54.7	1 32 32.01	8 1 54.4	19.3	11.0	1.31	15	7 52.7	1 31 22.06	10 18 9.1	12.1	6.9	0.82
31	10 49.7	1 31 26.52	+7 59 45.3	19.2	10.9	1.30	16	7 49.8	1 32 22.33	+10 25 45.5	11.9	6.8	0.81
Nov. 1	10 44.7	1 30 23.33	7 57 48.0	19.0	10.8	1.29	17	7 46.9	1 33 24.60	10 33 29.9	11.8	6.8	0.80
2	10 39.7	1 29 22.56	7 56 3.0	18.9	10.8	1.28	18	7 44.0	1 34 28.83	10 41 21.8	11.6	6.7	0.79
3	10 34.8	1 28 24.33	7 54 30.8	18.8	10.7	1.27	19	7 41.2	1 35 34.97	10 49 21.0	11.5	6.6	0.78
4	10 30.0	1 27 28.72	7 53 11.7	18.6	10.6	1.26	20	7 38.4	1 36 43.00	10 57 27.1	11.4	6.5	0.77
5	10 25.2	1 26 35.82	+7 52 6.2	18.5	10.6	1.25	21	7 35.6	1 37 52.88	+11 5 40.1	11.3	6.5	0.77
6	10 20.4	1 25 45.72	7 51 14.4	18.3	10.5	1.24	22	7 32.9	1 39 4.57	11 13 59.7	11.2	6.4	0.76
7	10 15.7	1 24 58.50	7 50 36.9	18.2	10.4	1.23	23	7 30.2	1 40 18.05	11 22 25.7	11.1	6.3	0.75
8	10 11.1	1 24 14.19	7 50 13.7	18.0	10.4	1.22	24	7 27.5	1 41 33.28	11 30 58.0	11.0	6.3	0.74
9	10 6.5	1 23 32.85	7 50 4.9	17.8	10.3	1.21	25	7 24.8	1 42 50.24	11 39 36.1	10.8	6.2	0.73
10	10 1.9	1 22 54.50	+7 50 10.6	17.7	10.2	1.20	26	7 22.2	1 44 8.87	+11 48 19.8	10.7	6.1	0.73
11	9 57.4	1 22 19.18	7 50 31.1	17.6	10.1	1.19	27	7 19.6	1 45 29.16	11 57 8.9	10.6	6.1	0.72
12	9 52.9	1 21 46.92	7 51 6.4	17.4	10.0	1.18	28	7 17.0	1 46 51.07	12 6 3.1	10.5	6.0	0.71
13	9 48.5	1 21 17.72	7 51 56.3	17.3	9.9	1.17	29	7 14.5	1 48 14.57	12 15 2.3	10.4	5.9	0.70
14	9 44.1	1 20 51.61	7 53 1.0	17.1	9.8	1.16	30	7 12.0	1 49 39.63	12 24 6.1	10.3	5.9	0.70
15	9 39.8	1 20 28.59	+7 54 20.5	16.9	9.7	1.14	31	7 9.5	1 51 6.22	+12 33 14.3	10.2	5.8	0.69
16	9 35.5	1 20 8.67	+7 55 54.7	16.8	9.6	1.13	32	7 7.1	1 52 34.30	+12 42 26.6	10.1	5.8	0.69

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 0	8 35.7	3 18 29.47	+17 17 53.0	2.1	21.8	1.63	Feb. 14	5 43.3	3 23 1.08	+17 47 23.7	1.8	18.9	1.40
1	8 31.6	3 18 17.55	17 17 24.2	2.0	21.7	1.62	15	5 39.7	3 23 24.87	17 49 7.1	1.8	18.8	1.40
2	8 27.5	3 18 6.43	17 16 58.5	2.0	21.7	1.62	16	5 36.2	3 23 49.34	17 50 52.6	1.8	18.7	1.40
3	8 23.4	3 17 56.13	17 16 35.9	2.0	21.6	1.61	17	5 32.7	3 24 14.50	17 52 40.4	1.8	18.7	1.39
4	8 19.3	3 17 46.65	17 16 16.5	2.0	21.6	1.61	18	5 29.2	3 24 40.31	17 54 30.2	1.7	18.6	1.39
5	8 15.2	3 17 37.99	+17 16 0.3	2.0	21.5	1.60	19	5 25.7	3 25 6.78	+17 56 22.1	1.7	18.6	1.39
6	8 11.1	3 17 30.16	17 15 47.3	2.0	21.4	1.60	20	5 22.2	3 25 33.91	17 58 16.0	1.7	18.5	1.38
7	8 7.1	3 17 23.15	17 15 37.5	2.0	21.4	1.59	21	5 18.8	3 26 1.68	18 0 12.0	1.7	18.5	1.38
8	8 3.0	3 17 16.98	17 15 30.9	2.0	21.3	1.59	22	5 15.3	3 26 30.10	18 2 9.9	1.7	18.4	1.37
9	7 59.0	3 17 11.64	17 15 27.5	2.0	21.2	1.58	23	5 11.8	3 26 59.15	18 4 9.6	1.7	18.3	1.37
10	7 55.0	3 17 7.14	+17 15 27.4	2.0	21.2	1.58	24	5 8.4	3 27 28.82	+18 6 11.1	1.7	18.3	1.37
11	7 51.0	3 17 3.48	17 15 30.5	2.0	21.1	1.57	25	5 5.0	3 27 59.11	18 8 14.4	1.7	18.2	1.36
12	7 47.0	3 17 0.66	17 15 36.9	2.0	21.0	1.57	26	5 1.6	3 28 30.01	18 10 19.5	1.7	18.2	1.36
13	7 43.1	3 16 58.68	17 15 46.5	2.0	21.0	1.56	27	4 58.2	3 29 1.52	18 12 26.3	1.7	18.1	1.36
14	7 39.1	3 16 57.54	17 15 59.3	2.0	20.9	1.56	28	4 54.8	3 29 33.63	18 14 34.7	1.7	18.1	1.35
15	7 35.2	3 16 57.24	+17 16 15.3	2.0	20.8	1.55	Sept. 1	19 23.2	6 9 45.35	+23 3 43.0	1.7	17.4	1.34
16	7 31.3	3 16 57.77	17 16 34.5	2.0	20.8	1.55	2	19 19.9	6 10 23.01	23 3 36.7	1.7	17.4	1.35
17	7 27.4	3 16 59.13	17 16 56.9	1.9	20.7	1.54	3	19 16.5	6 11 0.11	23 3 29.9	1.7	17.5	1.35
18	7 23.5	3 17 1.32	17 17 22.4	1.9	20.6	1.54	4	19 13.2	6 11 36.66	23 3 22.8	1.7	17.5	1.35
19	7 19.6	3 17 4.34	17 17 51.0	1.9	20.6	1.53	5	19 9.9	6 12 12.64	23 3 15.3	1.7	17.6	1.36
20	7 15.7	3 17 8.18	+17 18 22.8	1.9	20.5	1.53	6	19 6.5	6 12 48.05	+23 3 7.4	1.7	17.6	1.36
21	7 11.8	3 17 12.84	17 18 57.8	1.9	20.4	1.52	7	19 3.2	6 13 22.88	23 2 59.3	1.7	17.7	1.36
22	7 8.0	3 17 18.32	17 19 35.8	1.9	20.4	1.52	8	18 59.8	6 13 57.12	23 2 50.9	1.7	17.7	1.37
23	7 4.2	3 17 24.62	17 20 16.9	1.9	20.3	1.51	9	18 56.5	6 14 30.76	23 2 42.1	1.7	17.8	1.37
24	7 0.3	3 17 31.73	17 21 1.1	1.9	20.2	1.51	10	18 53.1	6 15 3.80	23 2 33.2	1.7	17.8	1.37
25	6 56.5	3 17 39.64	+17 21 48.3	1.9	20.2	1.50	11	18 49.7	6 15 36.24	+23 2 24.0	1.7	17.9	1.38
26	6 52.8	3 17 48.36	17 22 38.5	1.9	20.1	1.50	12	18 46.3	6 16 8.07	23 2 14.7	1.7	17.9	1.38
27	6 49.0	3 17 57.88	17 23 31.7	1.9	20.0	1.49	13	18 42.9	6 16 39.27	23 2 5.3	1.7	18.0	1.39
28	6 45.2	3 18 8.20	17 24 27.8	1.9	20.0	1.49	14	18 39.4	6 17 9.85	23 1 55.7	1.7	18.0	1.39
29	6 41.5	3 18 19.31	17 25 26.9	1.9	19.9	1.48	15	18 36.0	6 17 39.79	23 1 46.1	1.7	18.1	1.39
30	6 37.8	3 18 31.21	+17 26 28.9	1.9	19.8	1.48	16	18 32.6	6 18 9.08	+23 1 36.4	1.7	18.1	1.40
31	6 34.0	3 18 43.90	17 27 33.7	1.9	19.8	1.47	17	18 29.1	6 18 37.73	23 1 26.5	1.7	18.2	1.40
Feb. 1	6 30.3	3 18 57.36	17 28 41.4	1.8	19.7	1.47	18	18 25.6	6 19 5.71	23 1 16.7	1.7	18.2	1.40
2	6 26.6	3 19 11.61	17 29 51.9	1.8	19.6	1.46	19	18 22.2	6 19 33.02	23 1 6.9	1.7	18.3	1.41
3	6 23.0	3 19 26.63	17 31 5.2	1.8	19.5	1.46	20	18 18.7	6 19 59.66	23 0 57.1	1.7	18.3	1.41
4	6 19.3	3 19 42.41	+17 32 21.2	1.8	19.5	1.45	21	18 15.2	6 20 25.61	+23 0 47.4	1.7	18.4	1.42
5	6 15.7	3 19 58.96	17 33 40.0	1.8	19.4	1.45	22	18 11.7	6 20 50.86	23 0 37.8	1.7	18.4	1.42
6	6 12.0	3 20 16.26	17 35 1.5	1.8	19.4	1.44	23	18 8.1	6 21 15.41	23 0 28.3	1.7	18.5	1.43
7	6 8.3	3 20 34.31	17 36 25.5	1.8	19.3	1.44	24	18 4.6	6 21 39.25	23 0 18.9	1.7	18.5	1.43
8	6 4.7	3 20 53.11	17 37 52.2	1.8	19.2	1.43	25	18 1.1	6 22 2.38	23 0 9.7	1.7	18.6	1.44
9	6 1.1	3 21 12.64	+17 39 21.3	1.8	19.2	1.43	26	17 57.5	6 22 24.77	+23 0 0.6	1.8	18.7	1.44
10	5 57.5	3 21 32.90	17 40 53.0	1.8	19.1	1.42	27	17 53.9	6 22 46.42	22 59 51.8	1.8	18.7	1.45
11	5 54.0	3 21 53.89	17 42 27.1	1.8	19.1	1.42	28	17 50.3	6 23 7.33	22 59 43.3	1.8	18.8	1.45
12	5 50.4	3 22 15.58	17 44 3.6	1.8	19.0	1.41	29	17 46.7	6 23 27.49	22 59 35.0	1.8	18.9	1.46
13	5 46.8	3 22 37.98	17 45 42.5	1.8	18.9	1.41	30	17 43.1	6 23 46.90	22 59 27.0	1.8	18.9	1.46
14	5 43.3	3 23 1.08	+17 47 23.7	1.8	18.9	1.40	Oct. 1	17 39.5	6 24 5.54	+22 59 19.3	1.8	19.0	1.46
15	5 39.7	3 23 24.87	+17 49 7.1	1.8	18.8	1.40	2	17 35.9	6 24 23.41	+22 59 12.0	1.8	19.0	1.47

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	17 39.5	6 24 5.54	+22 59 19.3	1.8	19.0	1.46	Nov. 16	14 38.0	6 23 27.06	+23 2 49.8	2.0	21.7	1.67
2	17 35.9	6 24 23.41	22 59 12.0	1.8	19.0	1.47	17	14 33.8	6 23 6.66	23 3 6.8	2.0	21.7	1.67
3	17 32.2	6 24 40.50	22 59 5.0	1.8	19.1	1.47	18	14 29.5	6 22 45.52	23 3 24.2	2.0	21.8	1.68
4	17 28.6	6 24 56.81	22 58 58.4	1.8	19.2	1.47	19	14 25.2	6 22 23.64	23 3 41.8	2.0	21.8	1.68
5	17 24.9	6 25 12.33	22 58 52.3	1.8	19.2	1.48	20	14 20.9	6 22 1.03	23 3 59.7	2.0	21.9	1.69
6	17 21.2	6 25 27.06	+22 58 46.5	1.8	19.3	1.48	21	14 16.5	6 21 37.71	+23 4 17.9	2.1	21.9	1.69
7	17 17.5	6 25 40.99	22 58 41.2	1.8	19.4	1.49	22	14 12.2	6 21 13.69	23 4 36.3	2.1	22.0	1.69
8	17 13.8	6 25 54.11	22 58 36.4	1.8	19.4	1.49	23	14 7.9	6 20 48.98	23 4 54.8	2.1	22.0	1.70
9	17 10.1	6 26 6.43	22 58 32.0	1.8	19.5	1.50	24	14 3.5	6 20 23.60	23 5 13.6	2.1	22.1	1.70
10	17 6.3	6 26 17.94	22 58 28.1	1.8	19.5	1.50	25	13 59.2	6 19 57.57	23 5 32.5	2.1	22.1	1.70
11	17 2.6	6 26 28.63	+22 58 24.7	1.8	19.6	1.51	26	13 54.8	6 19 30.91	+23 5 51.5	2.1	22.2	1.71
12	16 58.8	6 26 38.50	22 58 21.8	1.8	19.7	1.51	27	13 50.4	6 19 3.63	23 6 10.6	2.1	22.2	1.71
13	16 55.0	6 26 47.54	22 58 19.5	1.8	19.7	1.52	28	13 46.0	6 18 35.75	23 6 29.8	2.1	22.3	1.71
14	16 51.2	6 26 55.76	22 58 17.7	1.9	19.8	1.52	29	13 41.6	6 18 7.30	23 6 49.0	2.1	22.3	1.72
15	16 47.4	6 27 3.13	22 58 16.4	1.9	19.9	1.53	30	13 37.2	6 17 38.28	23 7 8.3	2.1	22.3	1.72
16	16 43.6	6 27 9.67	+22 58 15.7	1.9	19.9	1.53	Dec. 1	13 32.8	6 17 8.73	+23 7 27.5	2.1	22.4	1.72
17	16 39.8	6 27 15.36	22 58 15.6	1.9	20.0	1.54	2	13 28.4	6 16 38.67	23 7 46.7	2.1	22.4	1.73
18	16 35.9	6 27 20.21	22 58 16.1	1.9	20.1	1.54	3	13 23.9	6 16 8.11	23 8 5.7	2.1	22.4	1.73
19	16 32.1	6 27 24.19	22 58 17.2	1.9	20.1	1.55	4	13 19.5	6 15 37.08	23 8 24.7	2.1	22.4	1.73
20	16 28.2	6 27 27.32	22 58 18.9	1.9	20.2	1.55	5	13 15.0	6 15 5.61	23 8 43.5	2.1	22.5	1.73
21	16 24.3	6 27 29.59	+22 58 21.1	1.9	20.3	1.56	6	13 10.5	6 14 33.72	+23 9 2.2	2.1	22.5	1.73
22	16 20.4	6 27 30.99	22 58 24.0	1.9	20.3	1.56	7	13 6.1	6 14 1.43	23 9 20.7	2.1	22.5	1.73
23	16 16.5	6 27 31.53	22 58 27.5	1.9	20.4	1.57	8	13 1.6	6 13 28.76	23 9 38.9	2.1	22.5	1.74
24	16 12.5	6 27 31.19	22 58 31.6	1.9	20.4	1.57	9	12 57.1	6 12 55.75	23 9 56.9	2.1	22.5	1.74
25	16 8.6	6 27 29.98	22 58 36.4	1.9	20.5	1.58	10	12 52.6	6 12 22.40	23 10 14.7	2.1	22.5	1.74
26	16 4.6	6 27 27.90	+22 58 41.8	1.9	20.5	1.58	11	12 48.1	6 11 48.74	+23 10 32.2	2.1	22.6	1.74
27	16 0.6	6 27 24.95	22 58 47.8	1.9	20.6	1.59	12	12 43.7	6 11 14.80	23 10 49.4	2.1	22.6	1.74
28	15 56.6	6 27 21.12	22 58 54.5	1.9	20.6	1.59	13	12 39.2	6 10 40.60	23 11 6.2	2.1	22.6	1.74
29	15 52.6	6 27 16.42	22 59 1.8	1.9	20.7	1.60	14	12 34.7	6 10 6.16	23 11 22.8	2.1	22.6	1.74
30	15 48.6	6 27 10.85	22 59 9.7	2.0	20.7	1.60	15	12 30.1	6 9 31.51	23 11 38.9	2.1	22.6	1.74
31	15 44.6	6 27 4.41	+22 59 18.3	2.0	20.8	1.61	16	12 25.6	6 8 56.68	+23 11 54.7	2.1	22.6	1.75
Nov. 1	15 40.5	6 26 57.10	22 59 27.4	2.0	20.8	1.61	17	12 21.1	6 8 21.69	23 12 10.1	2.1	22.6	1.75
2	15 36.4	6 26 48.93	22 59 37.2	2.0	20.9	1.61	18	12 16.6	6 7 46.58	23 12 25.2	2.1	22.6	1.75
3	15 32.3	6 26 39.90	22 59 47.6	2.0	20.9	1.62	19	12 12.0	6 7 11.36	23 12 39.8	2.1	22.6	1.75
4	15 28.2	6 26 30.02	22 59 58.5	2.0	21.0	1.62	20	12 7.5	6 6 36.05	23 12 54.0	2.1	22.6	1.75
5	15 24.1	6 26 19.29	+23 0 10.1	2.0	21.1	1.63	21	12 3.0	6 6 0.69	+23 13 7.8	2.1	22.6	1.75
6	15 20.0	6 26 7.72	23 0 22.1	2.0	21.1	1.63	22	11 58.5	6 5 25.31	23 13 21.1	2.1	22.6	1.75
7	15 15.9	6 25 55.31	23 0 34.7	2.0	21.2	1.63	23	11 54.0	6 4 49.93	23 13 34.0	2.1	22.6	1.75
8	15 11.8	6 25 42.07	23 0 47.9	2.0	21.3	1.64	24	11 49.4	6 4 14.60	23 13 46.5	2.1	22.6	1.75
9	15 7.6	6 25 28.00	23 1 1.6	2.0	21.3	1.64	25	11 44.9	6 3 39.32	23 13 58.5	2.1	22.6	1.75
10	15 3.4	6 25 13.12	+23 1 15.7	2.0	21.4	1.64	26	11 40.4	6 3 4.12	+23 14 10.1	2.1	22.6	1.75
11	14 59.2	6 24 57.43	23 1 30.3	2.0	21.4	1.65	27	11 35.9	6 2 29.04	23 14 21.3	2.1	22.6	1.75
12	14 55.0	6 24 40.93	23 1 45.4	2.0	21.5	1.65	28	11 31.4	6 1 54.11	23 14 32.0	2.1	22.6	1.75
13	14 50.8	6 24 23.64	23 2 0.9	2.0	21.5	1.66	29	11 26.9	6 1 19.36	23 14 42.3	2.1	22.6	1.75
14	14 46.5	6 24 5.56	23 2 16.8	2.0	21.6	1.66	30	11 22.4	6 0 44.80	23 14 52.2	2.1	22.6	1.75
15	14 42.3	6 23 46.70	+23 2 33.1	2.0	21.6	1.66	31	11 17.9	6 0 10.47	+23 15 1.6	2.1	22.6	1.75
16	14 38.0	6 23 27.06	+23 2 49.8	2.0	21.7	1.67	32	11 13.4	5 59 36.41	+23 15 10.7	2.1	22.6	1.75

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Jan. 10	18 11.5	13 35 17.18	−7 16 23.5	0.9	8.1	0.58	Feb. 25	15 10.7	13 35 24.25	−7 4 8.6	1.0	8.7	0.62
11	18 7.7	13 35 26.09	7 16 58.3	0.9	8.1	0.58	26	15 6.6	13 35 15.50	7 3 3.1	1.0	8.7	0.63
12	18 3.9	13 35 34.63	7 17 30.8	0.9	8.1	0.58	27	15 2.6	13 35 6.40	7 1 55.9	1.0	8.7	0.63
13	18 0.1	13 35 42.79	7 18 1.0	0.9	8.1	0.58	28	14 58.5	13 34 56.97	7 0 46.9	1.0	8.7	0.63
14	17 56.3	13 35 50.57	7 18 29.0	0.9	8.1	0.59	Mar. 1	14 54.4	13 34 47.22	6 59 36.2	1.0	8.7	0.63
15	17 52.5	13 35 57.97	−7 18 54.6	0.9	8.2	0.59	2	14 50.3	13 34 37.14	−6 58 23.7	1.0	8.7	0.63
16	17 48.7	13 36 4.98	7 19 18.0	0.9	8.2	0.59	3	14 46.2	13 34 26.74	6 57 9.6	1.0	8.8	0.63
17	17 44.9	13 36 11.60	7 19 39.0	0.9	8.2	0.59	4	14 42.1	13 34 16.02	6 55 53.9	1.0	8.8	0.63
18	17 41.0	13 36 17.84	7 19 57.8	0.9	8.2	0.59	5	14 38.0	13 34 4.99	6 54 36.6	1.0	8.8	0.63
19	17 37.2	13 36 23.70	7 20 14.3	0.9	8.2	0.59	6	14 33.8	13 33 53.66	6 53 17.7	1.0	8.8	0.63
20	17 33.4	13 36 29.16	−7 20 28.5	0.9	8.2	0.59	7	14 29.7	13 33 42.03	−6 51 57.3	1.0	8.8	0.63
21	17 29.5	13 36 34.24	7 20 40.4	0.9	8.2	0.59	8	14 25.6	13 33 30.11	6 50 35.5	1.0	8.8	0.63
22	17 25.7	13 36 38.92	7 20 50.1	0.9	8.2	0.59	9	14 21.4	13 33 17.91	6 49 12.2	1.0	8.8	0.63
23	17 21.8	13 36 43.22	7 20 57.4	0.9	8.3	0.59	10	14 17.3	13 33 5.43	6 47 47.6	1.0	8.8	0.63
24	17 17.9	13 36 47.11	7 21 2.4	0.9	8.3	0.60	11	14 13.2	13 32 52.69	6 46 21.7	1.0	8.8	0.63
25	17 14.1	13 36 50.61	−7 21 5.2	0.9	8.3	0.60	12	14 9.0	13 32 39.68	−6 44 54.5	1.0	8.9	0.64
26	17 10.2	13 36 53.72	7 21 5.6	0.9	8.3	0.60	13	14 4.9	13 32 26.42	6 43 26.0	1.0	8.9	0.64
27	17 6.3	13 36 56.43	7 21 3.8	0.9	8.3	0.60	14	14 0.7	13 32 12.91	6 41 56.3	1.0	8.9	0.64
28	17 2.4	13 36 58.74	7 20 59.6	0.9	8.3	0.60	15	13 56.5	13 31 59.16	6 40 25.5	1.0	8.9	0.64
29	16 58.5	13 37 0.65	7 20 53.1	0.9	8.3	0.60	16	13 52.4	13 31 45.17	6 38 53.7	1.0	8.9	0.64
30	16 54.6	13 37 2.16	−7 20 44.3	0.9	8.4	0.60	17	13 48.2	13 31 30.97	−6 37 20.7	1.0	8.9	0.64
31	16 50.7	13 37 3.26	7 20 33.3	0.9	8.4	0.60	18	13 44.1	13 31 16.54	6 35 46.7	1.0	8.9	0.64
Feb. 1	16 46.8	13 37 3.97	7 20 19.9	0.9	8.4	0.60	19	13 39.9	13 31 1.90	6 34 11.8	1.0	8.9	0.64
2	16 42.8	13 37 4.28	7 20 4.3	1.0	8.4	0.60	20	13 35.7	13 30 47.07	6 32 36.0	1.0	8.9	0.64
3	16 38.9	13 37 4.19	7 19 46.4	1.0	8.4	0.60	21	13 31.5	13 30 32.04	6 30 59.3	1.0	8.9	0.64
4	16 35.0	13 37 3.70	−7 19 26.2	1.0	8.4	0.61	22	13 27.3	13 30 16.82	−6 29 21.7	1.0	8.9	0.64
5	16 31.0	13 37 2.81	7 19 3.8	1.0	8.4	0.61	23	13 23.1	13 30 1.41	6 27 43.4	1.0	8.9	0.64
6	16 27.0	13 37 1.52	7 18 39.1	1.0	8.4	0.61	24	13 18.9	13 29 45.84	6 26 4.4	1.0	8.9	0.64
7	16 23.1	13 36 59.83	7 18 12.2	1.0	8.5	0.61	25	13 14.8	13 29 30.10	6 24 24.7	1.0	8.9	0.64
8	16 19.1	13 36 57.75	7 17 43.1	1.0	8.5	0.61	26	13 10.6	13 29 14.21	6 22 44.3	1.0	9.0	0.64
9	16 15.2	13 36 55.28	−7 17 11.7	1.0	8.5	0.61	27	13 6.4	13 28 58.17	−6 21 3.4	1.0	9.0	0.64
10	16 11.2	13 36 52.41	7 16 38.2	1.0	8.5	0.61	28	13 2.2	13 28 41.99	6 19 21.9	1.0	9.0	0.64
11	16 7.2	13 36 49.16	7 16 2.5	1.0	8.5	0.61	29	12 58.0	13 28 25.68	6 17 40.0	1.0	9.0	0.64
12	16 3.2	13 36 45.52	7 15 24.7	1.0	8.5	0.61	30	12 53.8	13 28 9.24	6 15 57.6	1.0	9.0	0.64
13	15 59.2	13 36 41.49	7 14 44.8	1.0	8.5	0.61	31	12 49.6	13 27 52.69	6 14 14.9	1.0	9.0	0.64
14	15 55.2	13 36 37.09	−7 14 2.8	1.0	8.6	0.61	Apr. 1	12 45.3	13 27 36.03	−6 12 31.9	1.0	9.0	0.64
15	15 51.2	13 36 32.30	7 13 18.7	1.0	8.6	0.61	2	12 41.1	13 27 19.28	6 10 48.6	1.0	9.0	0.64
16	15 47.2	13 36 27.14	7 12 32.6	1.0	8.6	0.62	3	12 36.9	13 27 2.45	6 9 5.0	1.0	9.0	0.64
17	15 43.1	13 36 21.60	7 11 44.4	1.0	8.6	0.62	4	12 32.7	13 26 45.53	6 7 21.4	1.0	9.0	0.64
18	15 39.1	13 36 15.70	7 10 54.2	1.0	8.6	0.62	5	12 28.5	13 26 28.55	6 5 37.7	1.0	9.0	0.64
19	15 35.1	13 36 9.43	−7 10 2.1	1.0	8.6	0.62	6	12 24.3	13 26 11.52	−6 3 53.9	1.0	9.0	0.64
20	15 31.0	13 36 2.79	7 9 7.9	1.0	8.6	0.62	7	12 20.1	13 25 54.43	6 2 10.2	1.0	9.0	0.64
21	15 27.0	13 35 55.79	7 8 11.8	1.0	8.6	0.62	8	12 15.9	13 25 37.31	6 0 26.6	1.0	9.0	0.64
22	15 22.9	13 35 48.44	7 7 13.8	1.0	8.7	0.62	9	12 11.6	13 25 20.16	5 58 43.1	1.0	9.0	0.64
23	15 18.9	13 35 40.72	7 6 13.9	1.0	8.7	0.62	10	12 7.4	13 25 2.99	5 56 59.8	1.0	9.0	0.64
24	15 14.8	13 35 32.66	−7 5 12.2	1.0	8.7	0.62	11	12 3.2	13 24 45.81	−5 55 16.8	1.0	9.0	0.64
25	15 10.7	13 35 24.25	−7 4 8.6	1.0	8.7	0.62	12	11 59.0	13 24 28.63	−5 53 34.2	1.0	9.0	0.64

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Apr. 10	12 7.4	13 25 2.99	−5 56 59.8	1.0	9.0	0.64	May 25	8 59.6	13 14 6.77	−4 56 23.3	1.0	8.7	0.62
11	12 3.2	13 24 45.81	5 55 16.8	1.0	9.0	0.64	26	8 55.5	13 13 57.40	4 55 39.9	1.0	8.7	0.62
12	11 59.0	13 24 28.63	5 53 34.2	1.0	9.0	0.64	27	8 51.4	13 13 48.33	4 54 58.5	1.0	8.7	0.62
13	11 54.8	13 24 11.45	5 51 51.9	1.0	9.0	0.64	28	8 47.3	13 13 39.59	4 54 19.2	1.0	8.7	0.62
14	11 50.5	13 23 54.29	5 50 10.0	1.0	9.0	0.64	29	8 43.3	13 13 31.17	4 53 42.1	1.0	8.7	0.62
15	11 46.3	13 23 37.16	−5 48 28.6	1.0	9.0	0.64	30	8 39.2	13 13 23.08	−4 53 7.1	1.0	8.7	0.62
16	11 42.1	13 23 20.07	5 46 47.8	1.0	9.0	0.64	31	8 35.1	13 13 15.32	4 52 34.3	1.0	8.6	0.62
17	11 37.9	13 23 3.02	5 45 7.5	1.0	9.0	0.64	June 1	6 31.1	13 13 7.90	4 52 3.7	1.0	8.6	0.62
18	11 33.7	13 22 46.03	5 43 27.8	1.0	9.0	0.64	2	8 27.0	13 13 0.81	4 51 35.3	1.0	8.6	0.62
19	11 29.5	13 22 29.09	5 41 48.8	1.0	9.0	0.64	3	8 23.0	13 12 54.06	4 51 9.2	1.0	8.6	0.61
20	11 25.3	13 22 12.22	−5 40 10.6	1.0	9.0	0.64	4	8 18.9	13 12 47.66	−4 50 45.4	1.0	8.6	0.61
21	11 21.0	13 21 55.43	5 38 33.1	1.0	9.0	0.64	5	8 14.9	13 12 41.60	4 50 23.8	1.0	8.6	0.61
22	11 16.8	13 21 38.73	5 36 56.4	1.0	9.0	0.64	6	8 10.9	13 12 35.90	4 50 4.5	1.0	8.6	0.61
23	11 12.6	13 21 22.12	5 35 20.6	1.0	9.0	0.64	7	8 6.9	13 12 30.55	4 49 47.5	1.0	8.6	0.61
24	11 8.4	13 21 5.61	5 33 45.8	1.0	9.0	0.64	8	8 2.8	13 12 25.55	4 49 32.7	1.0	8.5	0.61
25	11 4.2	13 20 49.21	−5 32 11.9	1.0	9.0	0.64	9	7 58.6	13 12 20.91	−4 49 20.2	1.0	8.5	0.61
26	11 0.0	13 20 32.93	5 30 38.9	1.0	9.0	0.64	10	7 54.8	13 12 16.62	4 49 9.9	1.0	8.5	0.61
27	10 55.8	13 20 16.78	5 29 7.0	1.0	8.9	0.64	11	7 50.8	13 12 12.70	4 49 2.0	1.0	8.5	0.61
28	10 51.6	13 20 0.76	5 27 36.3	1.0	8.9	0.64	12	7 46.9	13 12 9.13	4 48 56.4	1.0	8.5	0.60
29	10 47.4	13 19 44.89	5 26 6.7	1.0	8.9	0.64	13	7 42.9	13 12 5.92	4 48 53.1	1.0	8.5	0.60
30	10 43.2	13 19 29.16	−5 24 38.3	1.0	8.9	0.64	14	7 38.9	13 12 3.08	−4 48 52.0	1.0	8.5	0.60
May 1	10 39.0	13 19 13.60	5 23 11.1	1.0	8.9	0.64	15	7 34.9	13 12 0.59	4 48 53.3	1.0	8.4	0.60
2	10 34.8	13 18 58.21	5 21 45.3	1.0	8.9	0.64	16	7 30.9	13 11 58.47	4 48 56.9	1.0	8.4	0.60
3	10 30.6	13 18 42.99	5 20 20.9	1.0	8.9	0.64	17	7 27.0	13 11 56.71	4 49 2.7	1.0	8.4	0.60
4	10 26.5	13 18 27.95	5 18 57.8	1.0	8.9	0.64	18	7 23.0	13 11 55.32	4 49 10.8	1.0	8.4	0.60
5	10 22.3	13 18 13.11	−5 17 36.2	1.0	8.9	0.64	19	7 19.1	13 11 54.29	−4 49 21.2	0.9	8.4	0.60
6	10 18.1	13 17 58.47	5 16 16.1	1.0	8.9	0.64	20	7 15.1	13 11 53.63	4 49 33.8	0.9	8.4	0.60
7	10 14.0	13 17 44.03	5 14 57.5	1.0	8.9	0.64	21	7 11.2	13 11 53.34	4 49 48.8	0.9	8.4	0.60
8	10 9.8	13 17 29.81	5 13 40.5	1.0	8.9	0.64	22	7 7.3	13 11 53.41	4 50 6.0	0.9	8.4	0.59
9	10 5.6	13 17 15.81	5 12 25.1	1.0	8.9	0.64	23	7 3.3	13 11 53.84	4 50 25.5	0.9	8.3	0.59
10	10 1.5	13 17 2.04	−5 11 11.3	1.0	8.9	0.64	24	6 59.4	13 11 54.64	−4 50 47.3	0.9	8.3	0.59
11	9 57.3	13 16 48.51	5 9 59.2	1.0	8.9	0.64	25	6 55.5	13 11 55.80	4 51 11.3	0.9	8.3	0.59
12	9 53.1	13 16 35.22	5 8 48.8	1.0	8.9	0.63	26	6 51.6	13 11 57.34	4 51 37.6	0.9	8.3	0.59
13	9 49.0	13 16 22.17	5 7 40.2	1.0	8.8	0.63	27	6 47.7	13 11 59.24	4 52 6.2	0.9	8.3	0.59
14	9 44.8	13 16 9.38	5 6 33.4	1.0	8.8	0.63	28	6 43.8	13 12 1.51	4 52 37.0	0.9	8.3	0.59
15	9 40.7	13 15 56.84	−5 5 28.4	1.0	8.8	0.63	29	6 39.9	13 12 4.15	−4 53 10.1	0.9	8.3	0.59
16	9 36.6	13 15 44.56	5 4 25.2	1.0	8.8	0.63	30	6 36.0	13 12 7.15	4 53 45.4	0.9	8.2	0.59
17	9 32.4	13 15 32.56	5 3 23.9	1.0	8.8	0.63	July 1	6 32.2	13 12 10.52	4 54 23.0	0.9	8.2	0.59
18	9 28.3	13 15 20.83	5 2 24.5	1.0	8.8	0.63	2	6 28.3	13 12 14.26	4 55 2.7	0.9	8.2	0.58
19	9 24.2	13 15 9.38	5 1 27.0	1.0	8.8	0.63	3	6 24.4	13 12 18.36	4 55 44.7	0.9	8.2	0.58
20	9 20.1	13 14 58.22	−5 0 31.4	1.0	8.8	0.63	4	6 20.6	13 12 22.83	−4 56 29.0	0.9	8.2	0.58
21	9 16.0	13 14 47.34	4 59 37.8	1.0	8.8	0.63	5	6 16.7	13 12 27.67	4 57 15.4	0.9	8.2	0.58
22	9 11.9	13 14 36.75	4 58 46.2	1.0	8.8	0.63	6	6 12.9	13 12 32.86	4 58 4.0	0.9	8.2	0.58
23	9 7.8	13 14 26.46	4 57 56.6	1.0	8.7	0.63	7	6 9.0	13 12 38.41	4 58 54.7	0.9	8.2	0.58
24	9 3.7	13 14 16.46	4 57 8.9	1.0	8.7	0.62	8	6 5.2	13 12 44.33	4 59 47.6	0.9	8.1	0.58
25	8 59.6	13 14 6.77	−4 56 23.3	1.0	8.7	0.62	9	6 1.4	13 12 50.59	−5 0 42.6	0.9	8.1	0.58
26	8 55.5	13 13 57.40	−4 55 39.9	1.0	8.7	0.62	10	5 57.5	13 12 57.21	−5 1 39.7	0.9	8.1	0.58

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Feb. 1	18 1.0	14 51 32.44	−16 1 50.3	0.5	1.8	0.12	Mar. 17	15 7.1	14 50 37.48	−15 57 14.8	0.5	1.9	0.13
2	17 57.1	14 51 35.80	16 2 4.2	0.5	1.8	0.12	18	15 3.1	14 50 31.73	15 56 48.9	0.5	1.9	0.13
3	17 53.3	14 51 38.95	16 2 17.2	0.5	1.8	0.13	19	14 59.0	14 50 25.82	15 56 22.3	0.5	1.9	0.13
4	17 49.4	14 51 41.87	16 2 29.2	0.5	1.8	0.13	20	14 55.0	14 50 19.74	15 55 55.0	0.5	1.9	0.13
5	17 45.5	14 51 44.58	16 2 40.2	0.5	1.8	0.13	21	14 51.0	14 50 13.49	15 55 26.9	0.5	1.9	0.13
6	17 41.6	14 51 47.07	−16 2 50.3	0.5	1.8	0.13	22	14 46.9	14 50 7.08	−15 54 58.0	0.5	1.9	0.13
7	17 37.7	14 51 49.34	16 2 59.4	0.5	1.8	0.13	23	14 42.9	14 50 0.51	15 54 28.5	0.5	1.9	0.13
8	17 33.8	14 51 51.39	16 3 7.5	0.5	1.8	0.13	24	14 38.8	14 49 53.78	15 53 58.3	0.5	1.9	0.13
9	17 29.9	14 51 53.22	16 3 14.7	0.5	1.8	0.13	25	14 34.8	14 49 46.90	15 53 27.4	0.5	1.9	0.13
10	17 26.0	14 51 54.83	16 3 20.9	0.5	1.8	0.13	26	14 30.7	14 49 39.86	15 52 55.8	0.5	1.9	0.13
11	17 22.1	14 51 56.22	−16 3 26.2	0.5	1.8	0.13	27	14 26.7	14 49 32.68	−15 52 23.6	0.5	1.9	0.13
12	17 18.2	14 51 57.38	16 3 30.5	0.5	1.8	0.13	28	14 22.7	14 49 25.35	15 51 50.7	0.5	1.9	0.13
13	17 14.3	14 51 58.33	16 3 33.8	0.5	1.8	0.13	29	14 18.6	14 49 17.88	15 51 17.2	0.5	1.9	0.13
14	17 10.3	14 51 59.06	16 3 36.1	0.5	1.8	0.13	30	14 14.5	14 49 10.27	15 50 43.1	0.5	1.9	0.13
15	17 6.4	14 51 59.58	16 3 37.6	0.5	1.8	0.13	31	14 10.5	14 49 2.52	15 50 8.4	0.5	1.9	0.13
16	17 2.5	14 51 59.87	−16 3 38.0	0.5	1.8	0.13	Apr. 1	14 6.4	14 48 54.65	−15 49 33.1	0.5	1.9	0.13
17	16 58.6	14 51 59.95	16 3 37.5	0.5	1.8	0.13	2	14 2.3	14 48 46.64	15 48 57.2	0.5	1.9	0.13
18	16 54.6	14 51 59.81	16 3 36.1	0.5	1.8	0.13	3	13 58.3	14 48 38.50	15 48 20.7	0.5	1.9	0.13
19	16 50.7	14 51 59.46	16 3 33.7	0.5	1.8	0.13	4	13 54.2	14 48 30.25	15 47 43.7	0.5	1.9	0.13
20	16 46.7	14 51 58.89	16 3 30.4	0.5	1.8	0.13	5	13 50.1	14 48 21.88	15 47 6.2	0.5	1.9	0.13
21	16 42.8	14 51 58.11	−16 3 26.2	0.5	1.8	0.13	6	13 46.1	14 48 13.39	−15 46 28.1	0.5	1.9	0.13
22	16 38.8	14 51 57.11	16 3 21.0	0.5	1.8	0.13	7	13 42.0	14 48 4.80	15 45 49.6	0.5	1.9	0.13
23	16 34.9	14 51 55.89	16 3 14.9	0.5	1.8	0.13	8	13 37.9	14 47 56.10	15 45 10.6	0.5	1.9	0.13
24	16 30.9	14 51 54.46	16 3 7.9	0.5	1.8	0.13	9	13 33.8	14 47 47.30	15 44 31.2	0.5	1.9	0.13
25	16 27.0	14 51 52.82	16 2 59.9	0.5	1.8	0.13	10	13 29.7	14 47 38.39	15 43 51.3	0.5	1.9	0.13
26	16 23.0	14 51 50.97	−16 2 51.0	0.5	1.8	0.13	11	13 25.7	14 47 29.39	−15 43 11.0	0.5	1.9	0.13
27	16 19.0	14 51 48.91	16 2 41.2	0.5	1.8	0.13	12	13 21.6	14 47 20.31	15 42 30.3	0.5	1.9	0.13
28	16 15.1	14 51 46.64	16 2 30.5	0.5	1.8	0.13	13	13 17.5	14 47 11.14	15 41 49.2	0.5	1.9	0.13
Mar. 1	16 11.1	14 51 44.16	16 2 18.8	0.5	1.8	0.13	14	13 13.4	14 47 1.89	15 41 7.6	0.5	1.9	0.13
2	16 7.1	14 51 41.48	16 2 6.3	0.5	1.8	0.13	15	13 9.3	14 46 52.56	15 40 25.8	0.5	1.9	0.13
3	16 3.1	14 51 38.58	−16 1 52.9	0.5	1.9	0.13	16	13 5.2	14 46 43.17	−15 39 43.6	0.5	1.9	0.13
4	15 59.2	14 51 35.49	16 1 38.6	0.5	1.9	0.13	17	13 1.1	14 46 33.70	15 39 1.2	0.5	1.9	0.13
5	15 55.2	14 51 32.18	16 1 23.4	0.5	1.9	0.13	18	12 57.1	14 46 24.16	15 38 18.4	0.5	1.9	0.13
6	15 51.2	14 51 28.68	16 1 7.3	0.5	1.9	0.13	19	12 53.0	14 46 14.57	15 37 35.3	0.5	1.9	0.13
7	15 47.2	14 51 24.98	16 0 50.3	0.5	1.9	0.13	20	12 48.9	14 46 4.92	15 36 52.0	0.5	1.9	0.13
8	15 43.2	14 51 21.08	−16 0 32.5	0.5	1.9	0.13	21	12 44.8	14 45 55.21	−15 36 8.4	0.5	1.9	0.13
9	15 39.2	14 51 16.99	16 0 13.8	0.5	1.9	0.13	22	12 40.7	14 45 45.45	15 35 24.7	0.5	1.9	0.13
10	15 35.2	14 51 12.70	15 59 54.3	0.5	1.9	0.13	23	12 36.6	14 45 35.65	15 34 40.7	0.5	1.9	0.13
11	15 31.2	14 51 8.22	15 59 33.9	0.5	1.9	0.13	24	12 32.5	14 45 25.81	15 33 56.5	0.5	1.9	0.13
12	15 27.2	14 51 3.55	15 59 12.7	0.5	1.9	0.13	25	12 28.4	14 45 15.93	15 33 12.1	0.5	1.9	0.13
13	15 23.2	14 50 58.70	−15 58 50.7	0.5	1.9	0.13	26	12 24.3	14 45 6.01	−15 32 27.5	0.5	1.9	0.13
14	15 19.2	14 50 53.66	15 58 27.9	0.5	1.9	0.13	27	12 20.2	14 44 56.07	15 31 42.9	0.5	1.9	0.13
15	15 15.1	14 50 48.45	15 58 4.3	0.5	1.9	0.13	28	12 16.1	14 44 46.10	15 30 58.1	0.5	1.9	0.13
16	15 11.1	14 50 43.05	15 57 40.0	0.5	1.9	0.13	29	12 12.0	14 44 36.12	15 30 13.2	0.5	1.9	0.13
17	15 7.1	14 50 37.48	15 57 14.8	0.5	1.9	0.13	30	12 7.9	14 44 26.11	15 29 28.2	0.5	1.9	0.13
18	15 3.1	14 50 31.73	−15 56 48.9	0.5	1.9	0.13	May 1	12 3.8	14 44 16.09	−15 28 43.1	0.5	1.9	0.13
19	14 59.0	14 50 25.82	−15 56 22.3	0.5	1.9	0.13	2	11 59.7	14 44 6.07	−15 27 58.0	0.5	1.9	0.13

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
May 1	12 3.8	14 44 16.09	−15 28 43.1	0.5	1.9	0.13	June 16	8 56.3	14 37 33.82	−14 58 34.7	0.5	1.9	0.13
2	11 59.7	14 44 6.07	15 27 58.0	0.5	1.9	0.13	17	8 52.2	14 37 27.71	14 58 7.6	0.5	1.9	0.13
3	11 55.6	14 43 56.05	15 27 12.9	0.5	1.9	0.13	18	8 48.2	14 37 21.76	14 57 41.3	0.5	1.9	0.13
4	11 51.5	14 43 46.02	15 26 27.8	0.5	1.9	0.13	19	8 44.2	14 37 15.97	14 57 15.7	0.5	1.9	0.13
5	11 47.4	14 43 36.00	15 25 42.7	0.5	1.9	0.13	20	8 40.2	14 37 10.34	14 56 50.9	0.5	1.9	0.13
6	11 43.3	14 43 25.99	−15 24 57.6	0.5	1.9	0.13	21	8 36.1	14 37 4.88	−14 56 26.9	0.5	1.9	0.13
7	11 39.2	14 43 16.00	15 24 12.6	0.5	1.9	0.13	22	8 32.1	14 36 59.58	14 56 3.7	0.5	1.9	0.13
8	11 35.1	14 43 6.03	15 23 27.7	0.5	1.9	0.13	23	8 28.1	14 36 54.46	14 55 41.2	0.5	1.9	0.13
9	11 31.0	14 42 56.08	15 22 42.9	0.5	1.9	0.13	24	8 24.1	14 36 49.52	14 55 19.7	0.5	1.9	0.13
10	11 26.9	14 42 46.16	15 21 58.2	0.5	1.9	0.13	25	8 20.1	14 36 44.75	14 54 58.9	0.5	1.9	0.13
11	11 22.8	14 42 36.27	−15 21 13.7	0.5	1.9	0.13	26	8 16.1	14 36 40.15	−14 54 38.9	0.5	1.9	0.13
12	11 18.8	14 42 26.42	15 20 29.3	0.5	1.9	0.13	27	8 12.1	14 36 35.73	14 54 19.8	0.5	1.9	0.13
13	11 14.7	14 42 16.61	15 19 45.1	0.5	1.9	0.13	28	8 8.1	14 36 31.49	14 54 1.6	0.5	1.9	0.13
14	11 10.6	14 42 6.85	15 19 1.1	0.5	1.9	0.13	29	8 4.1	14 36 27.44	14 53 44.2	0.5	1.9	0.13
15	11 6.5	14 41 57.13	15 18 17.3	0.5	1.9	0.13	30	8 0.1	14 36 23.57	14 53 27.7	0.5	1.9	0.13
16	11 2.4	14 41 47.47	−15 17 33.7	0.5	1.9	0.13	July 1	7 56.1	14 36 19.89	−14 53 12.1	0.5	1.9	0.13
17	10 58.3	14 41 37.86	15 16 50.4	0.5	1.9	0.13	2	7 52.1	14 36 16.39	14 52 57.4	0.5	1.9	0.13
18	10 54.2	14 41 28.31	15 16 7.4	0.5	1.9	0.13	3	7 48.1	14 36 13.08	14 52 43.5	0.5	1.9	0.13
19	10 50.1	14 41 18.83	15 15 24.7	0.5	1.9	0.13	4	7 44.1	14 36 9.97	14 52 30.6	0.5	1.8	0.13
20	10 46.0	14 41 9.41	15 14 42.3	0.5	1.9	0.13	5	7 40.1	14 36 7.05	14 52 18.6	0.5	1.8	0.13
21	10 41.9	14 41 0.07	−15 14 0.2	0.5	1.9	0.13	6	7 36.2	14 36 4.32	−14 52 7.6	0.5	1.8	0.13
22	10 37.8	14 40 50.80	15 13 18.4	0.5	1.9	0.13	7	7 32.2	14 36 1.78	14 51 57.4	0.5	1.8	0.13
23	10 33.8	14 40 41.61	15 12 37.0	0.5	1.9	0.13	8	7 28.2	14 35 59.45	14 51 48.2	0.5	1.8	0.13
24	10 29.7	14 40 32.50	15 11 55.9	0.5	1.9	0.13	9	7 24.2	14 35 57.31	14 51 39.9	0.5	1.8	0.13
25	10 25.6	14 40 23.47	15 11 15.3	0.5	1.9	0.13	10	7 20.3	14 35 55.37	14 51 32.5	0.5	1.8	0.13
26	10 21.5	14 40 14.54	−15 10 35.0	0.5	1.9	0.13	11	7 16.3	14 35 53.62	−14 51 26.1	0.5	1.8	0.13
27	10 17.4	14 40 5.70	15 9 55.2	0.5	1.9	0.13	12	7 12.4	14 35 52.07	14 51 20.6	0.5	1.8	0.13
28	10 13.4	14 39 56.95	15 9 15.8	0.5	1.9	0.13	13	7 8.4	14 35 50.72	14 51 16.1	0.5	1.8	0.13
29	10 9.3	14 39 48.31	15 8 36.9	0.5	1.9	0.13	14	7 4.5	14 35 49.58	14 51 12.5	0.5	1.8	0.13
30	10 5.2	14 39 39.77	15 7 58.5	0.5	1.9	0.13	15	7 0.5	14 35 48.63	14 51 9.8	0.5	1.8	0.13
31	10 1.1	14 39 31.34	−15 7 20.5	0.5	1.9	0.13	16	6 56.6	14 35 47.89	−14 51 8.1	0.5	1.8	0.13
June 1	9 57.1	14 39 23.02	15 6 43.1	0.5	1.9	0.13	17	6 52.6	14 35 47.34	14 51 7.4	0.5	1.8	0.13
2	9 53.0	14 39 14.81	15 6 6.2	0.5	1.9	0.13	18	6 48.7	14 35 47.00	14 51 7.6	0.5	1.8	0.13
3	9 48.9	14 39 6.73	15 5 29.9	0.5	1.9	0.13	19	6 44.8	14 35 46.85	14 51 8.8	0.5	1.8	0.13
4	9 44.9	14 38 58.76	15 4 54.1	0.5	1.9	0.13	20	6 40.8	14 35 46.91	14 51 10.9	0.5	1.8	0.13
5	9 40.8	14 38 50.92	−15 4 18.9	0.5	1.9	0.13	21	6 36.9	14 35 47.18	−14 51 14.0	0.5	1.8	0.13
6	9 36.8	14 38 43.21	15 3 44.4	0.5	1.9	0.13	22	6 33.0	14 35 47.64	14 51 18.1	0.5	1.8	0.13
7	9 32.7	14 38 35.63	15 3 10.4	0.5	1.9	0.13	23	6 29.0	14 35 48.31	14 51 23.1	0.5	1.8	0.13
8	9 28.6	14 38 28.19	15 2 37.1	0.5	1.9	0.13	24	6 25.1	14 35 49.19	14 51 29.1	0.5	1.8	0.13
9	9 24.6	14 38 20.88	15 2 4.4	0.5	1.9	0.13	25	6 21.2	14 35 50.26	14 51 36.0	0.5	1.8	0.13
10	9 20.5	14 38 13.71	−15 1 32.4	0.5	1.9	0.13	26	6 17.3	14 35 51.55	−14 51 43.9	0.5	1.8	0.13
11	9 16.5	14 38 6.69	15 1 1.0	0.5	1.9	0.13	27	6 13.4	14 35 53.03	14 51 52.7	0.5	1.8	0.12
12	9 12.4	14 37 59.82	15 0 30.4	0.5	1.9	0.13	28	6 9.5	14 35 54.72	14 52 2.5	0.5	1.8	0.12
13	9 8.4	14 37 53.09	15 0 0.4	0.5	1.9	0.13	29	6 5.6	14 35 56.62	14 52 13.3	0.5	1.8	0.12
14	9 4.4	14 37 46.51	14 59 31.1	0.5	1.9	0.13	30	6 1.7	14 35 58.72	14 52 25.1	0.5	1.8	0.12
15	9 0.3	14 37 40.09	−14 59 2.5	0.5	1.9	0.13	31	5 57.8	14 36 1.02	−14 52 37.8	0.5	1.8	0.12
16	8 56.3	14 37 33.82	−14 58 34.7	0.5	1.9	0.13	Aug. 1	5 53.9	14 36 3.53	−14 52 51.5	0.5	1.8	0.12

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s
Jan. 0	9 57.3	4 40 18.82	+20 37 4.3	0.3	1.3	0.09
1	9 53.3	4 40 12.78	20 36 54.8	0.3	1.3	0.09
2	9 49.2	4 40 6.83	20 36 45.4	0.3	1.3	0.09
3	9 45.2	4 40 0.96	20 36 36.3	0.3	1.3	0.09
4	9 41.2	4 39 55.18	20 36 27.4	0.3	1.3	0.09
5	9 37.1	4 39 49.49	+20 36 18.6	0.3	1.3	0.09
6	9 33.1	4 39 43.89	20 36 10.1	0.3	1.3	0.09
7	9 29.1	4 39 38.38	20 36 1.8	0.3	1.3	0.09
8	9 25.1	4 39 32.95	20 35 53.7	0.3	1.3	0.09
9	9 21.0	4 39 27.62	20 35 45.7	0.3	1.3	0.09
10	9 17.0	4 39 22.40	+20 35 38.1	0.3	1.3	0.09
11	9 13.0	4 39 17.28	20 35 30.7	0.3	1.3	0.09
12	9 9.0	4 39 12.27	20 35 23.5	0.3	1.3	0.09
13	9 5.0	4 39 7.36	20 35 16.6	0.3	1.3	0.09
14	9 1.0	4 39 2.56	20 35 9.9	0.3	1.3	0.09
15	8 57.0	4 38 57.86	+20 35 3.4	0.3	1.3	0.09
16	8 52.9	4 38 53.26	20 34 57.2	0.3	1.3	0.09
17	8 48.9	4 38 48.79	20 34 51.2	0.3	1.3	0.09
18	8 44.9	4 38 44.43	20 34 45.4	0.3	1.3	0.09
19	8 40.9	4 38 40.19	20 34 40.0	0.3	1.3	0.09
20	8 36.9	4 38 36.06	+20 34 34.8	0.3	1.3	0.09
21	8 32.9	4 38 32.06	20 34 29.9	0.3	1.3	0.09
22	8 28.9	4 38 28.17	20 34 25.2	0.3	1.3	0.09
23	8 25.0	4 38 24.40	20 34 20.8	0.3	1.3	0.09
24	8 21.0	4 38 20.76	20 34 16.7	0.3	1.3	0.09
25	8 17.0	4 38 17.23	+20 34 12.8	0.3	1.3	0.09
26	8 13.0	4 38 13.84	20 34 9.3	0.3	1.3	0.09
27	8 9.0	4 38 10.57	20 34 6.0	0.3	1.3	0.09
28	8 5.0	4 38 7.44	20 34 2.9	0.3	1.3	0.09
29	8 1.0	4 38 4.43	20 34 0.2	0.3	1.3	0.09
30	7 57.0	4 38 1.55	+20 33 57.7	0.3	1.3	0.09
31	7 53.1	4 37 58.81	20 33 55.5	0.3	1.3	0.09
Feb. 1	7 49.1	4 37 56.19	20 33 53.6	0.3	1.3	0.09
2	7 45.1	4 37 53.72	20 33 52.0	0.3	1.3	0.09
3	7 41.1	4 37 51.38	20 33 50.7	0.3	1.3	0.09
4	7 37.2	4 37 49.19	+20 33 49.7	0.3	1.3	0.09
5	7 33.2	4 37 47.13	20 33 48.9	0.3	1.3	0.09
6	7 29.3	4 37 45.20	20 33 48.5	0.3	1.3	0.09
7	7 25.3	4 37 43.42	20 33 48.4	0.3	1.3	0.09
8	7 21.3	4 37 41.77	20 33 48.5	0.3	1.3	0.09
9	7 17.4	4 37 40.27	+20 33 49.0	0.3	1.3	0.09
10	7 13.4	4 37 38.91	20 33 49.7	0.3	1.3	0.09
11	7 9.5	4 37 37.69	20 33 50.8	0.3	1.3	0.09
12	7 5.5	4 37 36.62	20 33 52.1	0.3	1.3	0.09
13	7 1.6	4 37 35.69	20 33 53.7	0.3	1.3	0.09
14	6 57.6	4 37 34.91	+20 33 55.7	0.3	1.3	0.09
15	6 53.7	4 37 34.26	+20 33 57.9	0.3	1.3	0.09
Feb. 15	6 53.7	4 37 34.26	+20 33 57.9	0.3	1.3	0.09
16	6 49.7	4 37 33.76	20 34 0.4	0.3	1.3	0.09
17	6 45.8	4 37 33.41	20 34 3.2	0.3	1.3	0.09
18	6 41.9	4 37 33.20	20 34 6.3	0.3	1.3	0.09
19	6 37.9	4 37 33.14	20 34 9.8	0.3	1.3	0.09
20	6 34.0	4 37 33.22	+20 34 13.5	0.3	1.3	0.09
21	6 30.1	4 37 33.44	20 34 17.5	0.3	1.3	0.09
22	6 26.1	4 37 33.81	20 34 21.8	0.3	1.3	0.09
23	6 22.2	4 37 34.32	20 34 26.3	0.3	1.3	0.09
24	6 18.3	4 37 34.97	20 34 31.1	0.3	1.3	0.09
25	6 14.4	4 37 35.77	+20 34 36.3	0.3	1.3	0.09
26	6 10.5	4 37 36.72	20 34 41.7	0.3	1.3	0.09
27	6 6.5	4 37 37.81	20 34 47.4	0.3	1.3	0.09
28	6 2.6	4 37 39.05	20 34 53.4	0.3	1.3	0.09
29	5 58.7	4 37 40.43	+20 34 59.7	0.3	1.3	0.09
Sept. 1	18 12.4	4 58 44.12	+21 12 54.4	0.3	1.3	0.09
2	18 8.5	4 58 46.37	21 12 55.1	0.3	1.3	0.09
3	18 4.6	4 58 48.48	21 12 55.6	0.3	1.3	0.09
4	18 0.7	4 58 50.46	21 12 55.8	0.3	1.3	0.09
5	17 56.8	4 58 52.29	21 12 55.9	0.3	1.3	0.09
6	17 52.9	4 58 53.98	+21 12 55.7	0.3	1.3	0.09
7	17 48.9	4 58 55.53	21 12 55.3	0.3	1.3	0.09
8	17 45.0	4 58 56.94	21 12 54.7	0.3	1.3	0.09
9	17 41.1	4 58 58.21	21 12 53.9	0.3	1.3	0.09
10	17 37.2	4 58 59.33	21 12 52.9	0.3	1.3	0.09
11	17 33.3	4 59 0.31	+21 12 51.7	0.3	1.3	0.09
12	17 29.4	4 59 1.16	21 12 50.2	0.3	1.3	0.09
13	17 25.5	4 59 1.86	21 12 48.6	0.3	1.3	0.09
14	17 21.5	4 59 2.42	21 12 46.7	0.3	1.3	0.09
15	17 17.6	4 59 2.83	21 12 44.7	0.3	1.3	0.09
16	17 13.7	4 59 3.11	+21 12 42.4	0.3	1.3	0.09
17	17 9.8	4 59 3.25	21 12 39.9	0.3	1.3	0.09
18	17 5.8	4 59 3.24	21 12 37.2	0.3	1.3	0.09
19	17 1.9	4 59 3.09	21 12 34.3	0.3	1.3	0.09
20	16 58.0	4 59 2.80	21 12 31.3	0.3	1.3	0.09
21	16 54.0	4 59 2.36	+21 12 28.0	0.3	1.3	0.09
22	16 50.1	4 59 1.78	21 12 24.5	0.3	1.3	0.09
23	16 46.1	4 59 1.06	21 12 20.8	0.3	1.3	0.09
24	16 42.2	4 59 0.20	21 12 16.9	0.3	1.3	0.09
25	16 38.2	4 58 59.21	21 12 12.9	0.3	1.3	0.09
26	16 34.3	4 58 58.07	+21 12 8.6	0.3	1.3	0.09
27	16 30.3	4 58 56.79	21 12 4.1	0.3	1.3	0.09
28	16 26.4	4 58 55.37	21 11 59.5	0.3	1.3	0.09
29	16 22.4	4 58 53.82	21 11 54.6	0.3	1.3	0.09
30	16 18.5	4 58 52.11	21 11 49.6	0.3	1.3	0.09
Oct. 1	16 14.5	4 58 50.27	+21 11 44.3	0.3	1.3	0.09
2	16 10.5	4 58 48.30	+21 11 38.9	0.3	1.3	0.09

FOR TRANSIT AT WASHINGTON.

Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.	Date.	Mean Time of Transit.	Apparent R. Ascension at Transit.	Apparent Declination at Transit.	Hor. Par.	Semi-diam.	S.T. of Sem. Pass. Mer.
	h m	h m s	° ′ ″	″	″	s		h m	h m s	° ′ ″	″	″	s
Oct. 1	16 14.5	4 58 50.27	+21 11 44.3	0.3	1.3	0.09	Nov. 16	13 10.1	4 55 18.65	+21 5 1.9	0.3	1.3	0.09
2	16 10.5	4 58 48.30	21 11 38.9	0.3	1.3	0.09	17	13 6.1	4 55 11.95	21 4 50.7	0.3	1.3	0.09
3	16 6.6	4 58 46.19	21 11 33.3	0.3	1.3	0.09	18	13 2.0	4 55 5.20	21 4 39.5	0.3	1.3	0.09
4	16 2.6	4 58 43.95	21 11 27.6	0.3	1.3	0.09	19	12 58.0	4 54 58.40	21 4 28.2	0.3	1.3	0.09
5	15 58.6	4 58 41.57	21 11 21.6	0.3	1.3	0.09	20	12 53.9	4 54 51.57	21 4 16.9	0.3	1.3	0.09
6	15 54.6	4 58 39.06	+21 11 15.5	0.3	1.3	0.09	21	12 49.9	4 54 44.68	+21 4 5.6	0.3	1.3	0.09
7	15 50.7	4 58 36.41	21 11 9.2	0.3	1.3	0.09	22	12 45.8	4 54 37.76	21 3 54.3	0.3	1.3	0.09
8	15 46.7	4 58 33.63	21 11 2.7	0.3	1.3	0.09	23	12 41.8	4 54 30.78	21 3 42.9	0.3	1.3	0.09
9	15 42.7	4 58 30.73	21 10 56.0	0.3	1.3	0.09	24	12 37.7	4 54 23.77	21 3 31.5	0.3	1.3	0.09
10	15 38.7	4 58 27.70	21 10 49.2	0.3	1.3	0.09	25	12 33.7	4 54 16.72	21 3 20.0	0.3	1.3	0.09
11	15 34.7	4 58 24.54	+21 10 42.2	0.3	1.3	0.09	26	12 29.6	4 54 9.64	+21 3 8.6	0.3	1.3	0.09
12	15 30.8	4 58 21.25	21 10 35.1	0.3	1.3	0.09	27	12 25.6	4 54 2.54	21 2 57.2	0.3	1.3	0.09
13	15 26.8	4 58 17.84	21 10 27.8	0.3	1.3	0.09	28	12 21.5	4 53 55.42	21 2 45.8	0.3	1.3	0.09
14	15 22.8	4 58 14.31	21 10 20.3	0.3	1.3	0.09	29	12 17.5	4 53 48.28	21 2 34.4	0.3	1.3	0.09
15	15 18.8	4 58 10.64	21 10 12.7	0.3	1.3	0.09	30	12 13.4	4 53 41.12	21 2 23.0	0.3	1.3	0.09
16	15 14.8	4 58 6.85	+21 10 4.9	0.3	1.3	0.09	Dec. 1	12 9.4	4 53 33.94	+21 2 11.6	0.3	1.3	0.09
17	15 10.8	4 58 2.95	21 9 57.0	0.3	1.3	0.09	2	12 5.3	4 53 26.74	21 2 0.2	0.3	1.3	0.09
18	15 6.8	4 57 58.93	21 9 48.9	0.3	1.3	0.09	3	12 1.3	4 53 19.52	21 1 48.8	0.3	1.3	0.09
19	15 2.8	4 57 54.79	21 9 40.6	0.3	1.3	0.09	4	11 57.2	4 53 12.31	21 1 37.5	0.3	1.3	0.09
20	14 58.8	4 57 50.54	21 9 32.2	0.3	1.3	0.09	5	11 53.1	4 53 5.10	21 1 26.2	0.3	1.3	0.09
21	14 54.8	4 57 46.18	+21 9 23.7	0.3	1.3	0.09	6	11 49.1	4 52 57.90	+21 1 15.0	0.3	1.3	0.09
22	14 50.8	4 57 41.70	21 9 15.0	0.3	1.3	0.09	7	11 45.1	4 52 50.69	21 1 3.8	0.3	1.3	0.09
23	14 46.8	4 57 37.10	21 9 6.2	0.3	1.3	0.09	8	11 41.0	4 52 43.49	21 0 52.6	0.3	1.3	0.09
24	14 42.8	4 57 32.38	21 8 57.3	0.3	1.3	0.09	9	11 37.0	4 52 36.28	21 0 41.5	0.3	1.3	0.09
25	14 38.8	4 57 27.57	21 8 48.2	0.3	1.3	0.09	10	11 32.9	4 52 29.08	21 0 30.5	0.3	1.3	0.09
26	14 34.7	4 57 22.65	+21 8 39.0	0.3	1.3	0.09	11	11 28.9	4 52 21.90	+21 0 19.5	0.3	1.3	0.09
27	14 30.7	4 57 17.63	21 8 29.7	0.3	1.3	0.09	12	11 24.8	4 52 14.74	21 0 8.5	0.3	1.3	0.09
28	14 26.7	4 57 12.51	21 8 20.2	0.3	1.3	0.09	13	11 20.8	4 52 7.60	20 59 57.7	0.3	1.3	0.09
29	14 22.7	4 57 7.28	21 8 10.7	0.3	1.3	0.09	14	11 16.7	4 52 0.49	20 59 46.9	0.3	1.3	0.09
30	14 18.7	4 57 1.96	21 8 1.0	0.3	1.3	0.09	15	11 12.7	4 51 53.41	20 59 36.2	0.3	1.3	0.09
31	14 14.6	4 56 56.54	+21 7 51.1	0.3	1.3	0.09	16	11 8.6	4 51 46.35	+20 59 25.6	0.3	1.3	0.09
Nov. 1	14 10.6	4 56 51.02	21 7 41.2	0.3	1.3	0.09	17	11 4.5	4 51 39.31	20 59 15.1	0.3	1.3	0.09
2	14 6.6	4 56 45.41	21 7 31.2	0.3	1.3	0.09	18	11 0.5	4 51 32.30	20 59 4.6	0.3	1.3	0.09
3	14 2.6	4 56 39.72	21 7 21.1	0.3	1.3	0.09	19	10 56.4	4 51 25.32	20 58 54.2	0.3	1.3	0.09
4	13 58.5	4 56 33.94	21 7 10.9	0.3	1.3	0.09	20	10 52.4	4 51 18.39	20 58 44.0	0.3	1.3	0.09
5	13 54.5	4 56 28.08	+21 7 0.6	0.3	1.3	0.09	21	10 48.4	4 51 11.51	+20 58 33.9	0.3	1.3	0.09
6	13 50.5	4 56 22.14	21 6 50.2	0.3	1.3	0.09	22	10 44.3	4 51 4.67	20 58 23.9	0.3	1.3	0.09
7	13 46.4	4 56 16.11	21 6 39.7	0.3	1.3	0.09	23	10 40.3	4 50 57.88	20 58 14.0	0.3	1.3	0.09
8	13 42.4	4 56 10.00	21 6 29.0	0.3	1.3	0.09	24	10 36.3	4 50 51.15	20 58 4.2	0.3	1.3	0.09
9	13 38.4	4 56 3.81	21 6 18.4	0.3	1.3	0.09	25	10 32.2	4 50 44.46	20 57 54.5	0.3	1.3	0.09
10	13 34.3	4 55 57.55	+21 6 7.7	0.3	1.3	0.09	26	10 28.2	4 50 37.81	+20 57 45.0	0.3	1.3	0.09
11	13 30.3	4 55 51.23	21 5 56.9	0.3	1.3	0.09	27	10 24.1	4 50 31.23	20 57 35.6	0.3	1.3	0.09
12	13 26.3	4 55 44.84	21 5 46.0	0.3	1.3	0.09	28	10 20.1	4 50 24.71	20 57 26.4	0.3	1.3	0.09
13	13 22.2	4 55 38.39	21 5 35.1	0.3	1.3	0.09	29	10 16.1	4 50 18.27	20 57 17.3	0.3	1.3	0.09
14	13 18.2	4 55 31.88	21 5 24.1	0.3	1.3	0.09	30	10 12.0	4 50 11.89	20 57 8.4	0.3	1.3	0.09
15	13 14.1	4 55 25.30	+21 5 13.0	0.3	1.3	0.09	31	10 8.0	4 50 5.59	+20 56 59.6	0.3	1.3	0.09
16	13 10.1	4 55 18.65	+21 5 1.9	0.3	1.3	0.09	32	10 3.9	4 49 59.35	+20 56 51.0	0.3	1.3	0.09

PART III

PHENOMENA

ECLIPSES IN 1894.

In the year 1894 there will be four eclipses: two of the sun and two of the moon.

I.—*A partial Eclipse of the Moon*, 1894, March 20—21, invisible at Washington; the beginning visible in the extreme west portion of North America, the Pacific Ocean, and Asia, except the extreme west portion; the end visible in Alaska, the Pacific Ocean and all of Asia.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☍ in right ascension, March 21ᵈ 1ʰ 27ᵐ 17.1ˢ

	h m s		s
Sun's right ascension	0 3 24.38	Hourly motion	9.10
Moon's right ascension	12 3 24.38	Hourly motion	120.73
	° ′ ″		′ ″
Sun's declination	0 22 10.1 N.	Hourly motion	0 59.2 N.
Moon's declination	0 36 9.5 N.	Hourly motion	16 29.3 S.
Sun's equa. hor. parallax	8.6	Sun's semidiameter	16 2.9
Moon's equa. hor. parallax	58 10.5	Moon's semidiameter	15 50.4

TIMES OF THE PHASES.

		d h m	
Moon enters penumbra	March	20 23 57.4	Greenwich Mean Time.
Moon enters shadow		21 1 25.3	
Middle of the eclipse		21 2 20.6	
Moon leaves shadow		21 3 15.7	
Moon leaves penumbra		21 4 43.7	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
	°	° ′	° ′
First	179 to E.	160 28 E.	0 37 N.
Last	121 to W.	133 42 E.	0 7 N.

Magnitude of the eclipse = 0.248, (moon's diameter = 1).

II.—*An Annular Eclipse of the Sun*, 1894, April 5, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

Greenwich mean time of ☌ in right ascension, April 5ᵈ 16ʰ 27ᵐ 39.2ˢ

	h m s		s s
Sun and moon's R. A.	1 0 16.90	Hourly motions	9.14 and 121.28
	° ′ ″		′ ″
Sun's declination	6 26 11.6 N.	Hourly motion	0 56.7 N.
Moon's declination	7 3 48.5 N.	Hourly motion	15 53.7 N.
Sun's equa. hor. parallax	8.6	Sun's true semidiameter	15 58.6
Moon's equa. hor. parallax	57 52.5	Moon's true semidiameter	15 45.5

CIRCUMSTANCES OF THE ECLIPSE.

			Longitude from Greenwich.	Latitude.
		d h m	° ′	° ′
Eclipse begins	April	5 13 15.9	72 24.2 E.	6 33.6 S.
Central eclipse begins		5 14 24.0	53 41.8 E.	6 47.4 N.
Central eclipse at noon		5 16 27.7	113 42.5 E.	47 22.3 N.
Central eclipse ends		5 17 23.3	157 30.7 W.	62 47.5 N.
Eclipse ends		5 18 31.5	179 34.2 W.	49 44.5 N.

III.—*A Partial Eclipse of the Moon*, 1894, September 14, visible at Washington; the beginning visible generally in the western portions of Europe and Africa, the Atlantic Ocean, North and South America, and the eastern portion of the Pacific Ocean; the end visible generally in the extreme west portion of Africa, the Atlantic Ocean, North and South America, and the eastern part of the Pacific Ocean.

ELEMENTS OF THE ECLIPSE.

		d	h	m	s
Greenwich mean time of ☍ in right ascension,	September	14	15	35	42.8

	h m s		s
Sun's right ascension	11 31 36.20	Hourly motion	8.97
Moon's right ascension	23 31 36.20	Hourly motion	109.98
	° ′ ″		′ ″
Sun's declination	3 4 10.0 N.	Hourly motion	0 57.8 S.
Moon's declination	3 59 33.5 S.	Hourly motion	14 52.6 N.
Sun's equa. hor. parallax	8.5	Sun's true semidiameter	15 54.9
Moon's equa. hor. parallax	55 24.1	Moon's true semidiameter	15 5.0

TIMES OF THE PHASES.

		d h m	
Moon enters penumbra	September	14 13 58.6	Greenwich Mean Time.
Moon enters shadow		14 15 35.6	
Middle of the eclipse		14 16 31.6	
Moon leaves shadow		14 17 27.7	
Moon leaves penumbra		14 19 4.4	

CIRCUMSTANCES OF THE ECLIPSE.

Contacts of Shadow with moon's limb.	Angles of position from north point.	The moon being in the zenith in longitude from Greenwich	and in latitude.
	°	° ′	° ′
First	0	55 5 W.	4 0 S.
Last	58 to W.	82 21 W.	3 32 S.

Magnitude of the eclipse = 0.231, (moon's diameter = 1).

IV.—*A Total Eclipse of the Sun*, 1894, September 28, invisible at Washington.

ELEMENTS OF THE ECLIPSE.

		d	h	m	s
Greenwich mean time of ☌ in right ascension,	September	28	18	6	16.4

	h m s		s s
Sun and moon's R. A.	12 22 19.38	Hourly motions	9.04 and 124.53
Sun's declination	2° 24′ 58″.3 S.	Hourly motion	0′ 58″.4 S.
Moon's declination	2 55 48.6 S.	Hourly motion	16 57.0 S.
Sun's equa. hor. parallax	8.6	Sun's true semidiameter	15 58.6
Moon's equa. hor. parallax	59 3.6	Moon's true semidiameter	16 4.8

CIRCUMSTANCES OF THE ECLIPSE.

		d h m	Longitude from Greenwich.	Latitude.
			° ′	° ′
Eclipse begins	September	28 15 1.0	42 50.7 E.	11 49.2 N.
Central eclipse begins		28 16 3.7	26 44.3 E.	1 47.1 N.
Eclipse at noon		28 18 6.2	86 1.3 E.	34 11.6 S.
Central eclipse ends		28 19 14.1	162 43.3 E.	56 24.9 S.
Eclipse ends		28 20 17.0	145 54.0 E.	46 24.1 S.

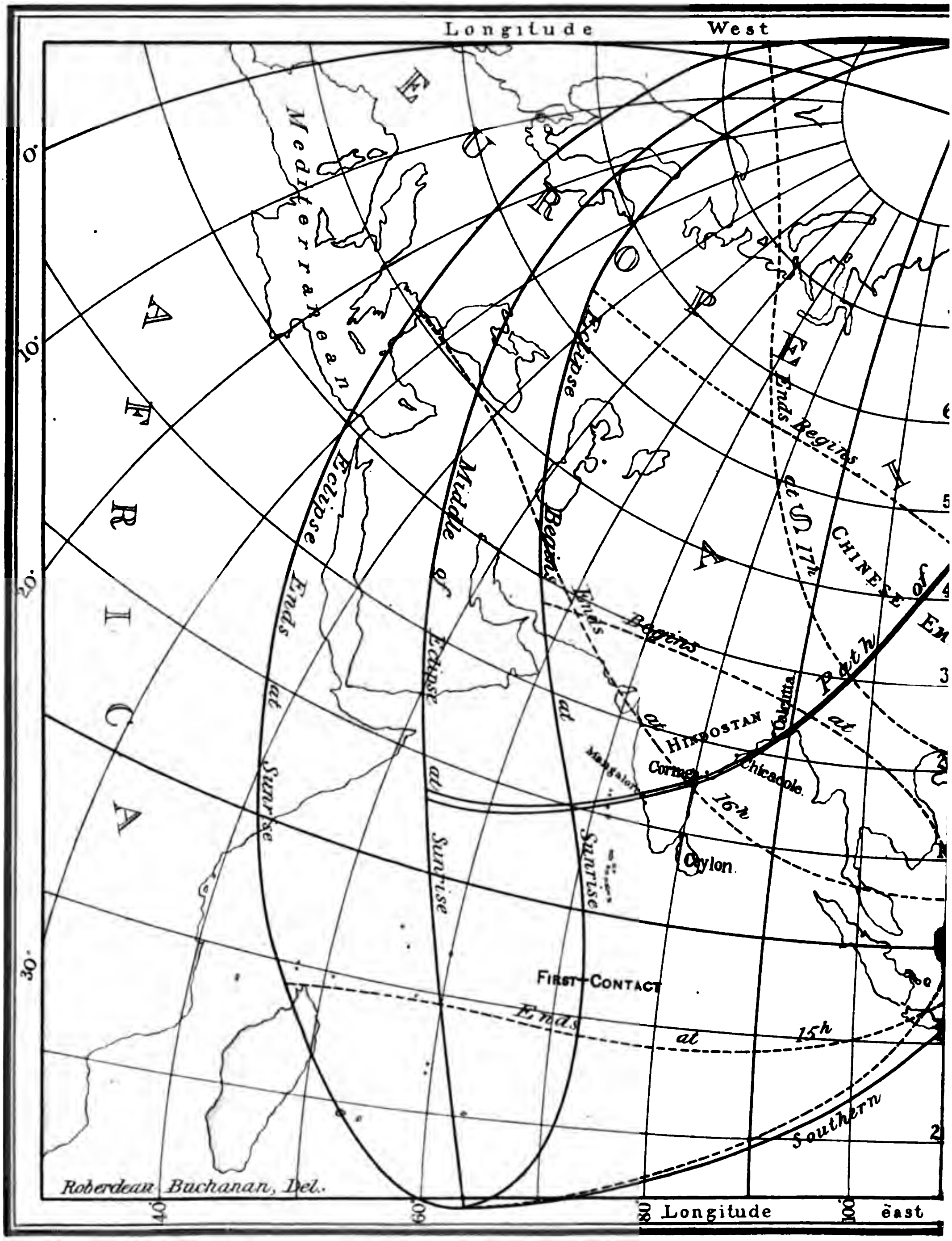
The regions within which the eclipses of the sun are visible, are laid down on the accompanying charts; from which, by means of the dotted lines, may also be found the Greenwich time of beginning and ending, within fifteen or twenty minutes.

BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE OF THE SUN, 1894, APRIL 5.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	*y*	Log sin *d*	Log cos *d*	*μ*	*l*	*l'*
h m					° ′		
13 10	−1.58686	−0.20113	+9.04615	+9.99730	196 51.9	+0.55000	+0.00410
20	1.50662	0.15797	9.04632	9.99730	199 21.9	0.54999	0.00409
30	1.42637	0.11481	9.04649	9.99730	201 52.0	0.54998	0.00408
40	1.34612	0.07165	9.04666	9.99729	204 22.0	0.54997	0.00407
50	1.26586	−0.02849	9.04683	9.99729	206 52.1	0.54996	0.00406
14 0	−1.18560	+0.01466	+9.04700	+9.99729	209 22.1	+0.54994	+0.00404
10	1.10533	0.05781	9.04717	9.99729	211 52.2	0.54993	0.00403
20	1.02506	0.10096	9.04734	9.99728	214 22.2	0.54991	0.00401
30	0.94478	0.14410	9.04751	9.99728	216 52.2	0.54989	0.00400
40	0.86450	0.18724	9.04768	9.99728	219 22.3	0.54988	0.00398
50	0.78422	0.23038	9.04785	9.99728	221 52.3	0.54986	0.00397
15 0	−0.70393	+0.27352	+9.04802	+9.99727	224 22.4	+0.54984	+0.00395
10	0 62364	0.31666	9.04819	9.99727	226 52.4	0.54983	0.00394
20	0.54334	0.35979	9.04836	9.99727	229 22.4	0.54981	0.00392
30	0.46304	0.40292	9.04853	9.99727	231 52.5	0.54979	0.00390
40	0.38273	0.44605	9.04870	9.99726	234 22.5	0.54977	0.00388
50	0.30242	0.48918	9.04887	9.99726	236 52.6	0.54975	0.00386
16 0	−0.22211	+0.53231	+9.04904	+9.99726	239 22.6	+0.54973	+0.00384
10	0.14179	0.57543	9.04921	9.99726	241 52.7	0.54971	0.00382
20	−0.06147	0.61855	9.04938	9.99726	244 22.7	0.54969	0.00380
30	+0.01886	0.66166	9.04955	9.99725	246 52.7	0.54967	0.00378
40	0.09919	0.70477	9.04972	9.99725	249 22.8	0.54965	0.00375
50	0.17952	0.74788	9.04989	9.99725	251 52.8	0.54963	0.00373
17 0	+0.25985	+0.79099	+9.05006	+9.99725	254 22.9	+0.54960	+0.00370
10	0.34018	0.83409	9.05023	9.99724	256 52.9	0.54958	0.00368
20	0.42051	0.87719	9.05040	9.99724	259 22.9	0.54956	0.00365
30	0.50084	0.92029	9.05057	9.99724	261 53.0	0.54953	0.00362
40	0.58117	0.96338	9.05074	9.99724	264 23.0	0.54950	0.00360
50	0.66150	1.00647	9.05091	9.99723	266 53.1	0.54947	0.00357
18 0	+0.74183	+1.04956	+9.05108	+9.99723	269 23.1	+0.54943	+0.00354
10	0.82216	1.09264	9.05125	9.99723	271 53.2	0.54941	0.00351
20	0.90249	1.13572	9.05142	9.99722	274 23.2	0.54938	0.00348
30	0.98282	1.17879	9.05159	9.99722	276 53.2	0.54935	0.00345
40	+1.06315	+1.22185	+9.05176	+9.99722	279 23.3	+0.54932	+0.00342

Greenwich Mean Time.	Log Δ *x* for 1 Minute.	Log Δ *y* for 1 Minute.	Log Δ *μ* for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
13 0	+7.9044	+7.6352	+9.4154	+7.66935	+7.66724
14 0	7.9045	7.6350	9.4154	7.66934	7.66723
15 0	7.9047	7.6349	9.4154	7.66934	7.66723
16 0	7.9048	7.6347	9.4154	7.66933	7.66722
17 0	7.9049	7.6345	9.4154	7.66933	7.66721
18 0	7.9049	7.6343	9.4154	7.66932	7.66721
19 0	+7.9049	+7.6340	+9.4154	+7.66932	+7.66720

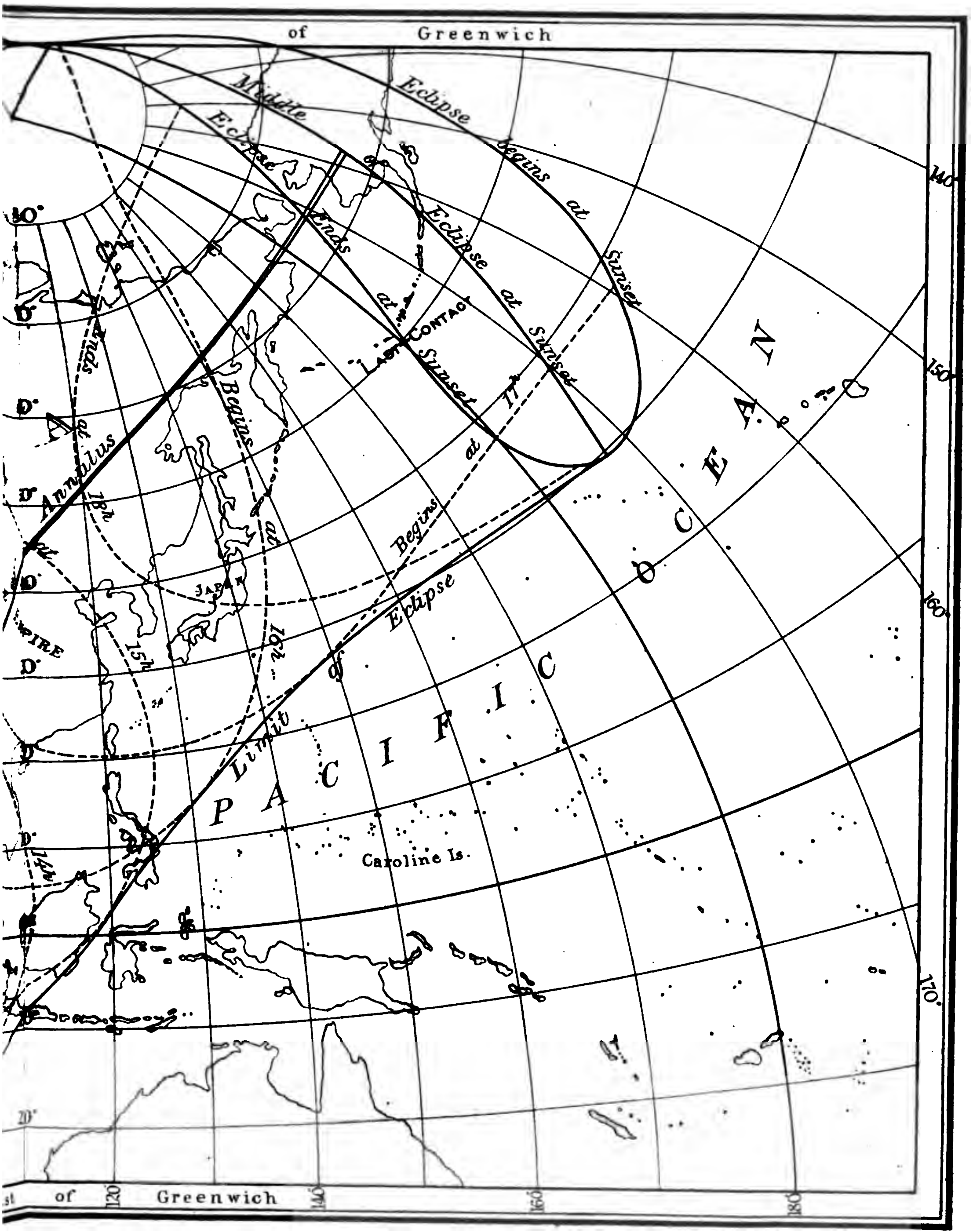
ANNULAR ECLIPSE



Roberdeau Buchanan, Del.

Note-*The hours of beginning and en*

OF APRIL 5TH 1894.



ning are expressed in Greenwich Mean Time.

PATH OF THE ANNULUS DURING THE ANNULAR ECLIPSE OF THE SUN, 1894, APRIL 5.

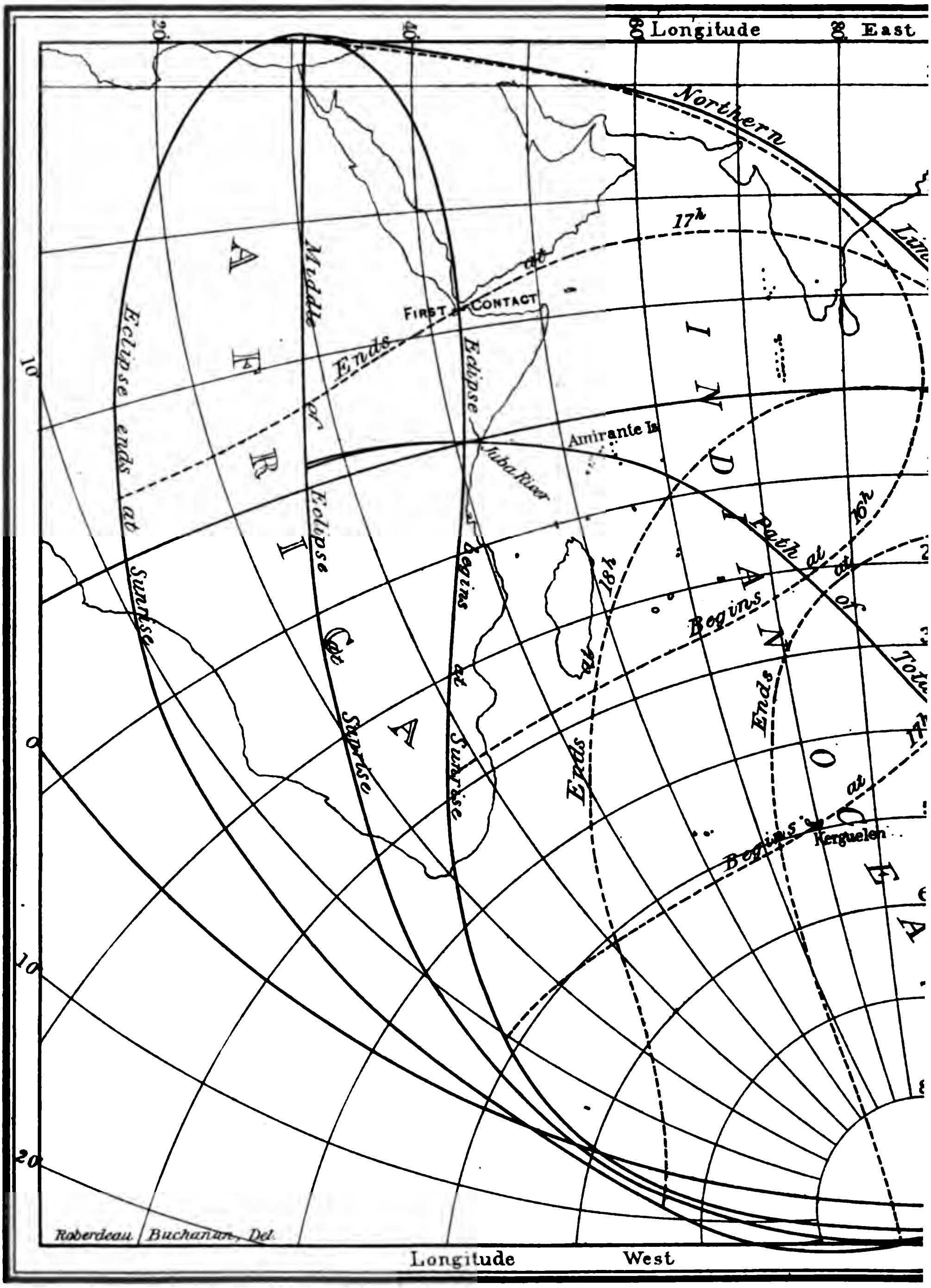
Greenwich Mean Time.	Northern Limit of Annulus Path.		Central Line.		Southern Limit of Annulus Path.		Duration of Annulus on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
	° ′	° ′	° ′	° ′	° ′	° ′	s
Limits	+ 7 4.2	53 45.1 E.	+ 6 47.4	53 51.8 E.	+ 6 30.6	53 58.7 E.	
14^h 25^m	7 52.9	59 22.5	7 49.8	60 35.4	7 46.7	61 48.3	45.8
30	+10 17.5	69 2.1	+10 12.3	69 25.2	+10 7.1	69 48.3	37.9
35	12 11.1	73 57.3	12 6.5	74 11.7	12 1.9	74 26.1	32.7
40	13 55.7	77 32.7	13 51.7	77 43.3	13 47.7	77 53.9	28.3
45	15 35.8	80 26.0	15 32.4	80 34.2	15 29.0	80 42.4	24.4
50	17 12.7	82 52.4	17 9.8	82 59.0	17 6.9	83 5.6	21.1
55	18 47.5	85 1.3	18 45.1	85 6.3	18 42.7	85 11.3	18.1
15 0	+20 20.7	86 56.7	+20 18.7	87 0.6	+20 16.7	87 4.5	15.4
5	21 53.0	88 41.7	21 51.3	88 45.0	21 49.6	88 48.3	12.9
10	23 24.5	90 18.5	23 23.0	90 21.2	23 21.5	90 23.9	10.7
15	24 55.4	91 49.9	24 54.2	91 52.0	24 53.0	91 54.1	8.7
20	26 26.0	93 16.7	26 25.0	93 18.3	26 24.0	93 19.9	7.0
25	27 56.4	94 40.0	27 55.6	94 41.3	27 54.8	94 42.6	5.5
30	+29 26.7	96 1.1	+29 26.1	96 2.1	+29 25.5	96 3.1	4.2
35	30 57.2	97 21.4	30 56.8	97 22.1	30 56.4	97 22.8	3.2
40	32 27.8	98 41.2	32 27.5	98 41.7	32 27.2	98 42.2	2.3
45	33 58.6	100 0.2	33 58.4	100 0.6	33 58.2	100 1.0	1.6
50	35 30.0	101 20.3	35 29.8	101 20.6	35 29.6	101 20.9	1.1
55	37 2.0	102 42.7	37 1.9	102 42.9	37 1.8	102 43.1	0.9
16 0	+38 34.8	104 8.2	+38 34.7	104 8.3	+38 34.7	104 8.4	0.9
5	40 8.3	105 37.2	40 8.1	105 37.4	40 7.9	105 37.6	1.1
10	41 42.5	107 11.2	41 42.2	107 11.5	41 41.9	107 11.8	1.5
15	43 17.7	108 51.0	43 17.3	108 51.4	43 16.9	108 51.8	2.1
20	44 53.7	110 38.6	44 53.2	110 39.2	44 52.7	110 39.8	3.0
25	46 31.1	112 35.2	46 30.3	112 36.0	46 29.5	112 36.8	4.0
30	+48 9.7	114 43.3	+48 8.6	114 44.3	+48 7.5	114 45.3	5.3
35	49 49.6	117 5.9	49 48.1	117 7.0	49 46.6	117 8.1	6.9
40	51 30.7	119 44.7	51 28.8	119 46.0	51 26.9	119 47.3	8.7
45	53 13.2	122 45.7	53 10.7	122 47.0	53 8.2	122 48.3	10.8
50	54 56.9	126 14.6	54 53.6	126 16.0	54 50.3	126 17.4	13.1
55	56 41.5	130 19.8	56 37.3	130 20.8	56 33.1	130 21.8	15.7
17 0	+58 26.3	135 13.4	+58 21.0	135 13.4	+58 15.7	135 13.4	18.7
5	60 10.3	141 14.7	60 3.5	141 12.5	59 56.7	141 10.3	22.1
10	61 50.7	148 56.4	61 42.1	148 49.4	61 33.5	148 42.4	25.9
15	63 21.1	159 21.3	63 10.5	159 3.7	62 59.9	158 46.1	30.6
20	64 20.6	175 31.8 E.	64 8.6	174 41.5 E.	63 56.6	173 51.2 E.	36.0
Limits	+62 56.3	157 26.5 W.	+62 47.5	157 30.7 W.	+62 26.6	157 51.7 W.	

BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE OF THE SUN, 1894, SEPTEMBER 28.

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Shadow on Fundamental Plane.	
	x	*y*	Log sin *d*	Log cos *d*	*μ*	*l*	*l′*
h m					° ′		
15 0	−1.51936	+0.31938	−8.61586	+9.99963	227 23.8	+0.54367	−0.00219
10	1.43781	0.27412	8.61634	9.99963	229 53.8	0.54370	0.00216
20	1.35625	0.22886	8.61681	9.99963	232 23.9	0.54373	0.00213
30	1.27469	0.18360	8.61729	9.99963	234 53.9	0.54376	0.00210
40	1.19313	0.13835	8.61776	9.99962	237 24.0	0.54379	0.00207
50	1.11157	0.09310	8.61824	9.99962	239 54.0	0.54382	0.00205
16 0	−1.03001	+0.04785	−8.61871	+9.99962	242 24.1	+0.54384	−0.00203
10	0.94845	+0.00259	8.61919	9.99962	244 54.1	0.54387	0.00200
20	0.86688	−0.04266	8.61966	9.99962	247 24.2	0.54389	0.00198
30	0.78531	0.08791	8.62014	9.99962	249 54.2	0.54392	0.00195
40	0.70374	0.13316	8.62061	9.99962	252 24.2	0.54394	0.00193
50	0.62217	0.17841	8.62108	9.99962	254 54.3	0.54396	0.00191
17 0	−0.54060	−0.22366	−8.62155	+9.99962	257 24.3	+0.54398	−0.00189
10	0.45903	0.26890	8.62202	9.99962	259 54.4	0.54400	0.00187
20	0.37746	0.31414	8.62249	9.99962	262 24.4	0.54402	0.00185
30	0.29589	0.35938	8.62296	9.99962	264 54.5	0.54404	0.00183
40	0.21431	0.40462	8.62343	9.99961	267 24.5	0.54406	0.00181
50	0.13274	0.44985	8.62390	9.99961	269 54.6	0.54408	0.00179
18 0	−0.05117	−0.49508	−8.62436	+9.99961	272 24.6	+0.54410	−0.00177
10	+0.03040	0.54031	8.62483	9.99961	274 54.7	0.54412	0.00175
20	0.11197	0.58554	8.62530	9.99961	277 24.7	0.54413	0.00174
30	0.19354	0.63076	8.62576	9.99961	279 54.8	0.54415	0.00172
40	0.27511	0.67598	8.62623	9.99961	282 24.8	0.54416	0.00171
50	0.35668	0.72120	8.62670	9.99961	284 54.8	0.54418	0.00169
19 0	+0.43824	−0.76642	−8.62716	+9.99961	287 24.9	+0.54419	−0.00168
10	0.51981	0.81163	8.62763	9.99961	289 54.9	0.54421	0.00166
20	0.60137	0.85684	8.62809	9.99961	292 25.0	0.54422	0.00165
30	0.68294	0.90205	8.62855	9.99961	294 55.0	0.54423	0.00164
40	0.76450	0.94725	8.62901	9.99960	297 25.1	0.54424	0.00163
50	0.84606	0.99245	8.62947	9.99960	299 55.1	0.54425	0.00162
20 0	+0.92762	−1.03765	−8.62993	+9.99960	302 25.2	+0.54426	−0.00161
10	1.00918	1.08284	8.63039	9.99960	304 55.2	0.54427	0.00160
20	+1.09074	−1.12803	−8.63085	+9.99960	307 25.3	+0.54428	−0.00159

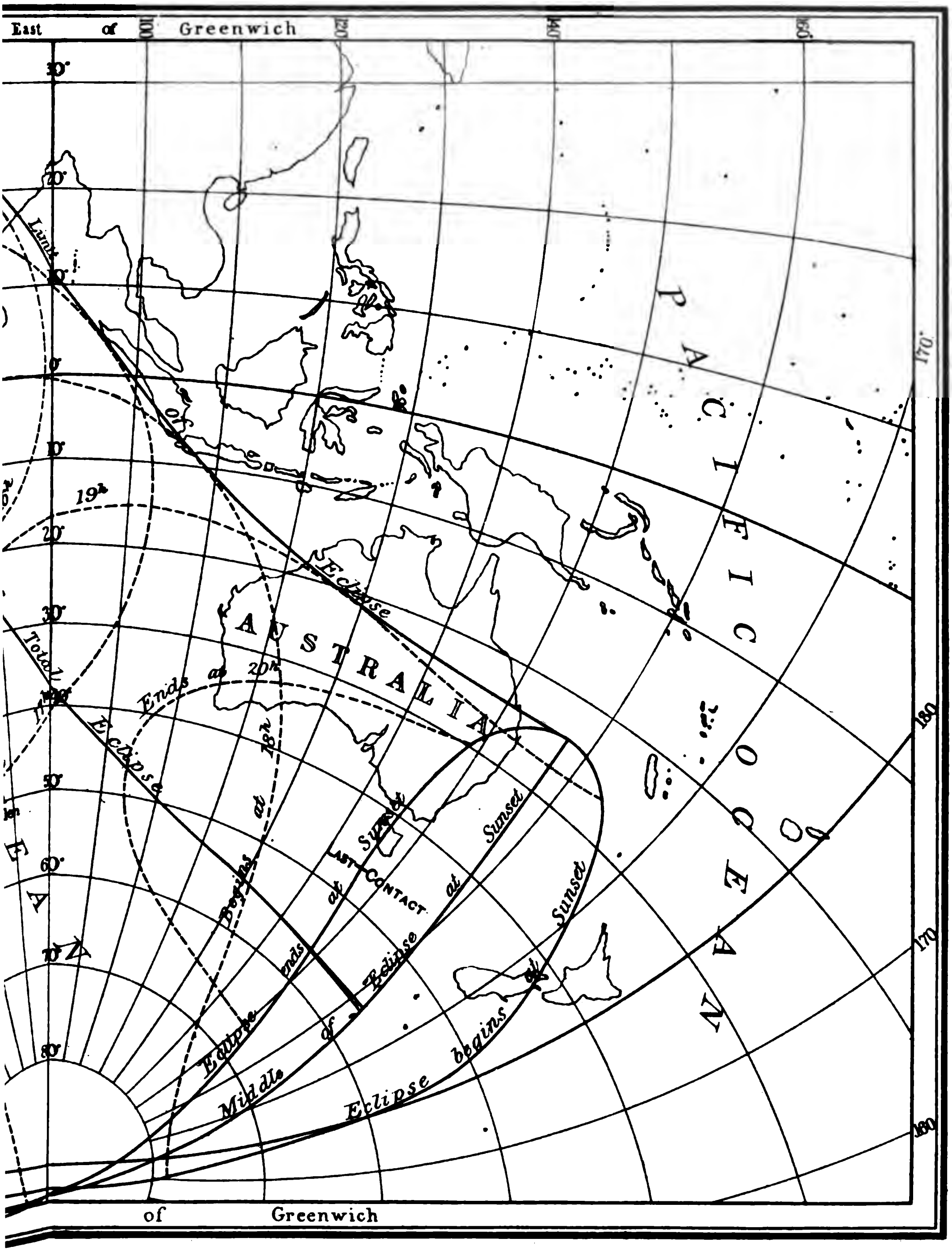
Greenwich Mean Time.	Log Δ *x* for 1 Minute.	Log Δ *y* for 1 Minute.	Log Δ *μ* for 1 Minute.	Log Tangents of Angles of Cones—	
				Penumbra.	Shadow.
h m					
15 0	+7.9114	−7.6557	+9.4177	+7.66930	+7.66719
16 0	7.9115	7.6557	9.4177	7.66931	7.66719
17 0	7.9115	7.6556	9.4177	7.66931	7.66720
18 0	7.9115	7.6554	9.4177	7.66932	7.66721
19 0	7.9115	7.6553	9.4177	7.66932	7.66721
20 0	7.9115	7.6551	9.4177	7.66933	7.66722
21 0	+7.9114	−7.6548	+9.4177	+7.66933	+7.66722

TOTAL ECLIPSE OF S



Note – *The hours of beginning and*

OF SEPTEMBER 28TH 1894.



nd ending are expressed in Greenwich Mean Time.

PATH OF THE SHADOW DURING THE TOTAL ECLIPSE OF THE SUN, 1894, SEPTEMBER 28.

Greenwich Mean Time.	Northern Limit of Shadow Path.		Central Line.		Southern Limit of Shadow Path.		Duration of Totality on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
	° ′	° ′	° ′	° ′	° ′	° ′	s
Limits	+ 1 57.7	26 43.8 E.	+ 1 47.1	26 44.3 E.	+ 1 39.2	26 34.0 E.	
16h 5m	+ 1 7.1	34 48.8	+ 1 6.4	34 45.5	+ 1 5.7	34 42.2	3.6
10	− 0 35.7	43 35.0	− 0 36.6	43 32.9	− 0 37.5	43 30.8	5.1
15	2 8.7	48 36.8	2 9.7	48 34.9	2 10.7	48 33.0	6.0
20	3 38.2	52 19.7	3 39.3	52 17.8	3 40.4	52 15.9	6.8
25	5 5.7	55 20.7	5 6.9	55 18.8	5 8.1	55 16.9	7.4
30	− 6 32.0	57 54.1	− 6 33.2	57 52.2	− 6 34.4	57 50.3	8.0
35	7 57.5	60 8.6	7 58.8	60 6.7	8 0.1	60 4.8	8.5
40	9 22.5	62 8.7	9 23.8	62 6.8	9 25.1	62 4.9	9.0
45	10 47.1	63 56.7	10 48.4	63 54.8	10 49.7	63 52.9	9.4
50	12 11.4	65 35.6	12 12.7	65 33.6	12 14.0	65 31.6	9.7
55	13 35.5	67 8.8	13 36.8	67 6.8	13 38.1	67 4.8	10.0
17 0	−14 59.4	68 36.4	−15 0.8	68 34.4	−15 2.2	68 32.4	10.4
5	16 23.5	69 59.3	16 24.9	69 57.3	16 26.3	69 55.3	10.6
10	17 47.8	71 18.6	17 49.2	71 16.6	17 50.6	71 14.6	10.8
15	19 12.4	72 35.6	19 13.8	72 33.6	19 15.2	72 31.6	10.9
20	20 37.3	73 50.9	20 38.7	73 48.9	20 40.1	73 46.9	11.1
25	22 2.4	75 5.1	22 3.9	75 3.1	22 5.4	75 1.1	11.2
30	−23 28.0	76 18.8	−23 29.5	76 16.8	−23 31.0	76 14.8	11.3
35	24 54.5	77 32.6	24 56.0	77 30.6	24 57.5	77 28.6	11.3
40	26 21.5	78 47.2	26 23.0	78 45.3	26 24.5	78 43.4	11.3
45	27 48.7	80 3.7	27 50.2	80 1.8	27 51.7	79 59.9	11.2
50	29 16.6	81 22.4	29 18.2	81 20.5	29 19.8	81 18.6	11.2
55	30 45.6	82 43.8	30 47.2	82 42.0	30 48.8	82 40.2	11.0
18 0	−32 15.7	84 9.1	−32 17.3	84 7.4	−32 18.9	84 5.7	10.9
5	33 46.7	85 39.0	33 48.3	85 37.3	33 49.9	85 35.6	10.8
10	35 18.7	87 14.9	35 20.4	87 13.3	35 22.1	87 11.7	10.6
15	36 52.0	88 57.9	36 53.7	88 56.3	36 55.4	88 54.7	10.3
20	38 26.7	90 49.6	38 28.4	90 48.1	38 30.1	90 46.6	10.0
25	40 2.8	92 51.3	40 4.5	92 49.9	40 6.2	92 48.5	9.7
30	−41 40.6	95 6.5	−41 42.3	95 5.2	−41 44.0	95 3.9	9.3
35	43 20.0	97 37.7	43 21.8	97 36.6	43 23.6	97 35.5	8.9
40	45 1.3	100 28.8	45 3.1	100 27.9	45 4.9	100 27.0	8.4
45	46 44.4	103 45.7	46 46.2	103 45.0	46 48.0	103 44.3	7.8
50	48 29.3	107 36.2	48 31.1	107 35.8	48 32.9	107 35.4	7.2
55	50 16.1	112 13.4	50 17.8	112 13.3	50 19.5	112 13.2	6.7
19 0	−52 4.1	117 58.1	−52 5.8	117 58.5	−52 7.5	117 58.9	6.0
5	53 52.5	125 32.4	53 54.1	125 33.5	53 55.7	125 34.6	5.2
10	55 36.8	136 48.1	55 38.2	136 50.3	55 39.6	136 52.5	4.1
Limits	−56 14.4	162 36.5 E.	−56 24.9	162 43.5 E.	−56 27.4	162 41.2 E.	

A Transit of Mercury, 1894.—A Transit of Mercury over the Sun's Disk, November 10, visible at Washington, and visible generally in the western portions of Europe, in Africa, North and South America, and the Pacific Ocean.

ELEMENTS OF THE TRANSIT.

Greenwich mean time of ☌ in right ascension, November 10ᵈ 6ʰ 54ᵐ 16ˢ.3

	h m s		s s
Sun and Mercury's R. A.	15 3 44.68	Hourly motions	+10.12 and —12.46
	° ′ ″		′ ″
Sun's declination	17 18 58.2 S.	Hourly motion	0 41.8 S.
Mercury's declination	17 14 5.2 S.	Hourly motion	1 45.2 N.
Sun's equa. hor. parallax	8.94	True semidiameter	16 9.83
Mercury's equa. hor. parallax	13.08	True semidiameter	4.94

TIMES OF THE PHASES.

		d h m s	
Ingress, exterior contact	November	10 3 55 31.2	Greenwich Mean Time.
Ingress, interior contact		10 3 57 15.4	
Least distance of centres 4′ 26″.8		10 6 33 48.5	
Egress, interior contact		10 9 10 26.4	
Egress, exterior contact		10 9 12 10.4	

CIRCUMSTANCES OF THE TRANSIT.

Exterior contacts.	Angles of position from north point.		The sun being in the zenith, in longitude from Greenwich	and in latitude.
	° ′		° ′	° ′
Ingress	98 32	toward East.	62 35 W.	17 17 S.
Egress	49 41	toward West.	142 14 W.	17 21 S.

The Greenwich mean time of exterior contacts, for any point on the surface of the earth, may be computed from the following formulæ, in which ρ denotes the radius of the earth at the place, ϕ' the geocentric north latitude and λ the longitude *west* from Greenwich.

$$\text{Ingress } T' = 3^{h}\,55^{m}\,31^{s}.2 + [0.7793]^{s}\,\rho\sin\phi' - [1.6352]^{s}\,\rho\cos\phi'\cos(329^{\circ}\,28'\,15'' - \lambda)$$

$$\text{Egress } T'' = 9\,12\,10.4 + [1.4333]\,\rho\sin\phi' + [1.5339]\,\rho\cos\phi'\cos(218\,51\,7 - \lambda)$$

WASHINGTON MEAN TIME.

PHASES OF THE MOON.

New Moon.				First Quarter.				Full Moon.				Last Quarter.			
	d	h	m		d	h	m		d	h	m		d	h	m
January	6	9	59.2	January	14	7	1.0	January	20	22	3.3	January	27	23	42.6
February	5	4	36.8	February	12	17	34.6	February	19	9	8.4	February	26	19	20.0
March	6	21	10.3	March	14	1	19.9	March	20	21	2.9	March	28	15	19.6
April	5	10	51.8	April	12	7	24.3	April	19	9	53.4	April	27	10.	12.4
May	4	21	33.7	May	11	13	12.9	May	18	23	34.7	May	27	2	56.1
June	3	5	48.2	June	9	20	5.9	June	17	13	58.1	June	25	16	54.4
July	2	12	37.3	July	9	5	6.9	July	17	4	54.5	July	25	3	58.8
July	31	19	15.9	August	7	16	57.0	August	15	20	8.8	August	23	12	31.5
August	30	2	56.3	September	6	7	54.7	September	14	11	13.3	September	21	19	23.9
September	28	12	35.7	October	6	1	52.9	October	14	1	32.6	October	21	1	47.5
October	28	0	48.9	November	4	22	7.7	November	12	14	41.0	November	19	9	0.0
November	26	15	46.1	December	4	19	7.0	December	12	2	37.6	December	18	18	7.5
December	26	9	11.8												

APOGEE, PERIGEE, AND GREATEST LIBRATION.

Apogee.			Perigee.			Greatest Libration.									
	d	h		d	h		d	h	m			d	h	m	
January	4	18.9	January	19	22.1	January	13	12	2	E.	January	25	6	33	W.
February	1	4.7	February	17	4.2	February	10	0	8	E.	February	22	21	7	W.
February	28	23.0	March	16	12.2	March	8	5	53	E.	March	22	14	52	W.
March	28	19.6	April	10	10.6	April	4	0	25	E.	April	18	12	50	W.
April	25	14.8	May	7	11.0	May	1	15	15	E.	May	14	18	52	W.
May	23	7.2	June	4	12.6	May	29	15	29	E.	June	11	0	50	W.
June	19	17.7	July	2	20.6	June	26	19	41	E.	July	9	23	54	W.
July	16	21.4	July	31	6.0	July	24	23	31	E.	August	6	4	10	W.
August	13	2.4	August	28	13.5	August	21	20	26	E.	September	3	8	5	W.
September	9	15.1	September	25	12.4	September	17	19	6	E.	October	1	7	8	W.
October	7	8.7	October	21	20.5	October	14	0	45	E.	October	28	18	16	W.
November	4	4.9	November	16	3.5	November	10	5	26	E.	November	24	4	56	W.
December	2	5.9	December	13	21.9	December	8	3	17	E.	December	20	17	7	W.
December	29	18.2													

FORMULÆ FOR THE LIBRATION OF THE MOON.

Put I, the inclination of the moon's equator to the ecliptic ($= 1° 28'.8$),

Ω, the mean longitude of the moon's ascending node, (see page 278), or the mean longitude of the descending node of the moon's equator,

C, the angle at the centre of the moon's disk made by a lunar meridian with the circle of declination, counted from north to east on the apparent disk,

λ, β, a', δ', the apparent longitude, latitude, right ascension, and declination of the moon, corrected for parallax,

λ', the selenocentric longitude of the earth, counted on the moon's equator from its descending node, Ω,

i, Δ, Ω', ☾, the quantities defined on page 276, where their values for the year are given.

The moon's libration in longitude and latitude may then be found, for any time, by means of the following formulæ, in connection with the tables given on pages 276 and 277:—

$$\left.\begin{aligned}\Delta\,\lambda &= -\,0'.57 \sin 2\,(\Omega - \lambda)\\ a &= \sin I \cos\,(\Omega - \lambda)\\ \tan B &= \tan I \sin\,(\Omega - \lambda)\\ \lambda' &= \lambda + \Delta\,\lambda + a\,b\end{aligned}\right\}\ \textit{See table, page 277.}$$

$$\text{The libration in latitude} = b = B - \beta$$

$$\text{The libration in longitude} = l = \lambda' - \text{☾}$$

$$\sin C = \sin i\,\frac{\cos\,(\lambda' + \Delta - \Omega)}{\cos \delta'} = -\,\sin i\,\frac{\cos\,(a' - \Omega')}{\cos b}$$

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
10 Libræ	6.5	-1.12	+ 0.2	-17 55.1	1 4 27.3	+ 8 27.4	-0.7355	0.5122	-0.2041	- 3	-90
ι^1 Libræ	5.0	1.22	- 1.1	19 23.4	14 40.4	- 5 38.1	-1.1270	0.5166	0.1866	-30	-90
42 Libræ	5.7	1.38	1.4	23 28.5	2 4 24.7	+ 7 40.7	+0.9452	0.5231	0.1651	+65	+10
B. A. C. 5253	5.8	1.44	2.0	24 13.1	10 58.6	- 9 57.9	+0.7288	0.5266	0.1526	+65	- 4
B. A. C. 5254	5.8	1.43	2.1	23 39.8	11 0.2	- 9 56.3	+0.1088	0.5266	0.1526	+35	-38
σ Scorpii	3.4	-1.54	- 3.2	-25 20.4	23 55.1	+ 2 33.6	+0.1628	0.5328	-0.1265	+35	-34
α Scorpii	1.4	1.57	3.4	26 11.9	3 3 45.0	+ 6 15.9	+0.6483	0.5355	0.1184	+61	- 8
22 Scorpii	5.5	1.55	3.7	24 53.0	4 9.2	+ 6 39.3	-0.8614	0.5355	0.1179	-20	-90
25 Scorpii	7.0	1.59	4.5	25 20.2	11 53.1	- 9 54.2	-1.1970	0.5387	0.1002	-47	-88
B. A. C. 5800	7.5	1.66	5.5	26 51.5	4 0 21.8	+ 2 11.5	-0.5784	0.5430	0.0704	- 9	-86
A Ophiuchi	4.9	-1.66	- 5.6	-26 26.9	0 56.3	+ 2 44.8	-1.0750	0.5431	-0.0700	-40	-90
B. A. C. 5813	6.8	1.66	5.6	26 23.7	1 18.3	+ 3 6.0	-1.1610	0.5433	0.0693	-47	-90
38 Ophiuchi	6.7	1.66	5.7	26 30.9	1 55.3	+ 3 41.8	-1.0680	0.5436	0.0673	-39	-90
43 Ophiuchi	5.8	1.69	5.7	28 2.5	4 28.4	+ 6 9.6	+0.4673	0.5444	0.0606	+46	-18
3 Sagittarii *var.*	4.6	1.71	6.0	27 47.5	15 22.8	- 7 18.4	-0.3301	0.5469	0.0332	0	-65
B. A. C. 6127	5.1	-1.72	- 7.9	-28 28.2	5 0 33.2	+ 1 33.0	+0.2188	0.5481	-0.0104	+27	-32
				NEW	*MOON.*						
A Sagittarii	5.3	1.52	11.7	26 29.1	7 2 41.4	+ 1 58.3	+0.6153	0.5391	+0.0125	+39	-10
χ Capricorni	5.4	1.27	12.4	21 37.4	8 11 55.2	+10 7.6	+0.1374	0.5236	0.1791	+39	-36
26 Capricorni	7.0	-1.26	-12.3	-20 37.5	12 16.5	+10 28.2	-0.8989	0.5236	+0.1794	-15	-90
27 Capricorni	6.5	1.26	12.3	20 59.1	12 24.5	+10 35.9	-0.4787	0.5231	0.1805	+ 8	-74
ϕ Capricorni	5.5	1.24	12.4	21 5.7	15 24.5	-10 29.7	+0.1906	0.5217	0.1855	+43	-34
33 Capricorni	5.7	1.20	12.4	21 18.3	19 38.0	- 6 24.0	+1.2180	0.5198	0.1923	+69	+31
ε Capricorni	4.7	1.15	12.2	19 56.7	9 2 6.9	- 0 7.0	+1.0020	0.5168	0.2021	+70	+12
κ Capricorni	5.0	-1.11	-12.1	-19 21.2	4 50.6	+ 2 31.7	+0.9097	0.5154	+0.2064	+71	+ 6
29 Aquarii (*mean.*)	6.5	1.04	11.6	17 28.7	15 2.4	-11 34.8	+1.0320	0.5110	0.2204	+73	+14
39 Aquarii	6.4	1.01	11.0	14 43.1	20 14.0	- 6 32.6	-0.8200	0.5088	0.2268	- 4	-90
45 Aquarii	6.3	0.99	10.7	13 50.3	23 39.5	- 3 13.0	-0.9933	0.5074	0.2310	-14	-90
50 Aquarii	6.1	0.96	10.7	14 4.2	10 2 29.5	- 0 28.1	-0.0817	0.5063	0.2344	+35	-49
B. A. C. 7835	6.5	-0.94	-10.5	-13 27.7	5 24.5	+ 2 21.8	-0.0562	0.5053	+0.2377	+37	-47
70 Aquarii	6.2	0.87	9.5	11 7.0	15 10.6	+11 51.0	-0.2348	0.5025	0.2465	+29	-57
Lalande 44734	6.8	0.85	9.1	10 37.4	17 24.8	- 9 58.7	-0.2170	0.5017	0.2488	+30	-56
h^1 Aquarii	5.4	0.81	8.4	8 16.0	11 0 2.8	- 3 32.0	-1.0940	0.5003	0.2540	-18	-90
h^2 Aquarii	7.4	0.81	8.4	8 19.7	0 7.8	- 3 27.2	-1.0070	0.5003	0.2540	-12	-90
h^3 Aquarii	7.0	-0.81	- 8.0	- 8 30.6	0 25.9	- 3 9.6	-0.7341	0.5001	+0.2545	+ 4	-90
h^4 Aquarii	8.0	0.80	8.2	8 16.1	1 8.3	- 2 28.4	-0.8149	0.5002	0.2548	0	-90
χ Aquarii	5.3	0.75	8.2	8 18.4	6 17.8	+ 2 22.2	+0.5494	0.4995	0.2581	+74	-16
20 Piscium	5.5	0.64	5.6	3 21.2	22 57.3	- 5 16.6	-0.3859	0.4989	0.2668	+24	-66
24 Piscium	6.1	0.61	5.6	3 44.7	12 1 37.2	- 2 41.3	+0.7433	0.4986	0.2677	+83	- 6
Lalande 47041	7.1	-0.60	- 4.5	- 0 52.0	5 17.2	+ 0 52.4	-1.3390	0.4994	+0.2688	-37	-90
44 Piscium	5.9	0.49	2.7	+ 1 21.0	18 52.6	- 9 55.6	-0.0212	0.5023	0.2709	+43	-45
B. A. C. 274	6.2	0.35	- 0.1	5 54.7	13 12 44.9	+ 7 25.3	0.0000	0.5093	0.2685	+44	-43
70 Piscium	8.0	0.35	+ 0.4	7 22.1	13 54.5	+ 8 32.8	-1.2140	0.5100	0.2681	-25	-83
ε Piscium	4.2	0.35	0.5	7 19.2	14 20.3	+ 8 57.9	-1.0480	0.5101	0.2681	-12	-83
ζ Piscium	4.8	-0.32	+ 0.5	+ 7 0.9	19 47.5	- 9 44.8	+0.7276	0.5131	+0.2659	+90	- 6
π Piscium	5.7	0.20	3.3	11 36.1	14 7 22.0	+ 1 28.3	-1.0030	0.5211	0.2590	-10	-78
B. A. C. 490	7.5	0.20	3.3	11 32.3	7 38.5	+ 1 44.4	-0.8664	0.5212	0.2590	- 2	-78
19 Arietis	5.7	-0.01	5.5	14 47.1	15 0 26.4	- 6 0.3	+0.0171	0.5356	0.2434	+45	-38
27 Arietis	6.3	+0.08	6.8	17 14.2	8 33.8	+ 1 50.7	-0.5537	0.5429	0.2332	+15	-67
36 Arietis	6.5	+0.16	+ 7.2	+17 19.0	14 31.9	+ 7 36.4	+0.7316	0.5492	+0.2246	+90	+ 2
40 Arietis	6.3	0.18	7.4	17 50.6	16 22.5	+ 9 23.1	+0.6071	0.5512	0.2217	+85	- 5
ρ^2 Arietis	6.0	0.22	7.6	17 54.1	19 32.2	-11 34.0	+1.2400	0.5546	0.2165	+90	+38
47 Arietis	6.0	0.22	8.3	20 14.7	20 28.5	-10 39.6	-0.9374	0.5551	0.2149	- 8	-70
ζ Arietis	4.7	0.33	9.1	20 39.2	16 3 37.3	- 3 46.4	+0.1416	0.5632	0.2017	+52	-26
B. A. C. 1055	6.8	+0.38	+ 9.6	+21 40.2	7 37.4	+ 0 4.8	-0.0925	0.5575	+0.1936	+39	-37

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
66 Arietis	6.0	+0.40	+ 9.9	+22 26.5	16 9 12.2	+ 1 36.0	-0.5661	0.5685	+0.1910	+13	-62
9 Tauri	7.0	0.45	10.1	22 51.8	12 40.1	+ 4 56.0	-0.3421	0.5729	0.1828	+26	-49
g Pleiadum	6.3	0.50	10.5	23 57.5	15 48.0	+ 7 56.6	-0.8804	0.5763	0.1758	- 6	-66
17 Tauri	4.3	0.50	10.5	23 47.0	15 50.0	+ 7 58.5	-0.6981	0.5763	0.1756	+ 6	-66
19 Tauri	5.0	0.50	10.6	24 8.2	15 57.6	+ 8 5.8	-1.0300	0.5764	0.1756	-16	-66
20 Tauri	5.0	+0.51	+10.5	+24 2.4	16 12.4	+ 8 20.1	-0.8904	0.5764	+0.1752	- 6	-66
21 Tauri	7.0	0.51	10.6	24 13.6	16 14.2	+ 8 21.8	-1.0730	0.5764	0.1751	-20	-66
22 Tauri	7.0	0.51	10.6	24 12.0	16 17.5	+ 8 25.0	-1.0350	0.5764	0.1750	-17	-66
23 Tauri	4.7	0.51	10.4	23 37.3	16 24.8	+ 8 32.0	-0.4350	0.5772	0.1739	+21	-53
24 Tauri	8.0	0.51	10.5	23 47.5	16 49.2	+ 8 55.4	-0.5335	0.5773	0.1733	+15	-58
η Tauri	3.0	+0.51	+10.5	+23 46.8	16 52.4	+ 8 58.5	-0.5136	0.5773	+0.1732	+16	-57
B. A. C. 1170	6.3	0.52	10.2	23 5.9	17 13.6	+ 9 18.8	+0.2325	0.5773	0.1728	+58	-18
B. A. C. 1171	7.8	0.53	10.5	24 1.4	17 16.4	+ 9 21.5	-0.6890	0.5774	0.1728	+ 6	-65
26 Tauri	7.0	0.53	10.4	23 32.1	17 27.5	+ 9 32.2	-0.1656	0.5782	0.1712	+35	-38
27 Tauri	4.0	0.53	10.5	23 43.9	17 32.5	+ 9 37.0	-0.3495	0.5785	0.1712	+25	-48
28 Tauri	6.2	+0.53	+10.5	+23 48.9	17 33.0	+ 9 37.5	-0.4314	0.5785	+0.1712	+20	-53
33 Tauri	6.3	0.58	10.2	22 52.2	20 40.7	-11 22.2	+1.0400	0.5819	0.1636	+90	+28
36 Tauri	6 0	0.62	10.5	23 49.0	23 30.9	- 8 38.7	+0.5451	0.5849	0.1561	+81	0
χ Tauri	5.7	0.74	10.8	25 22.9	17 6 29.3	- 1 57.3	+0.0083	0.5921	0.1371	+45	-26
W. iv, 1421	6.0	1.03	10.9	27 54.0	23 53.2	- 9 17.6	-0.5569	0.6071	0.0838	+13	-52
22 Aurigæ	7.0	+1.11	+10.8	+28 50.5	18 4 46.9	- 4 36.6	-1.1140	0.6105	+0.0670	-28	-61
β Tauri	2.0	1.12	10.7	28 31.2	5 49.7	- 3 36.5	-0.7276	0.6109	0.0635	+ 2	-62
B. A. C. 1772	6.3	1.19	10.4	29 9.5	10 26.8	+ 0 48.3	-1.1010	0.6138	0.0467	-26	-61
136 Tauri	5.3	1.25	9.6	27 35.4	15 25.7	+ 5 33.9	+0.6368	0.6160	+0.0287	+90	+17
49 Aurigæ	5.7	1.43	8.3	28 6.4	19 6 5.7	- 4 25.5	+0.1702	0.6183	-0.0236	+54	- 7
53 Aurigæ	6.0	+1.46	+ 8.3	+29 4.6	7 11.5	- 3 22.7	-0.8132	0.6183	-0.0275	- 4	-61
54 Aurigæ	6.0	1.45	8.1	28 21.5	7 36.7	- 2 58.6	-0.1178	0.6183	0.0301	+37	-22
25 Geminorum	6.5	1.46	8.1	28 17.7	8 14.5	- 2 22.5	-0.0736	0.6183	0.0313	+40	-20
28 Geminorum	6.0	1.48	8.0	29 4.8	9 25.3	- 1 14.9	-0.8865	0.6180	0.0370	- 9	-61
W. vi, 1656	8.2	1.51	6.9	26 59.6	16 9.0	+ 5 10.8	+0.8337	0.6167	0.0602	+90	+25
47 Geminorum	6.0	+1.53	+ 6.4	+27 1.9	18 49.1	+ 7 43.7	+0.6229	0.6159	-0.0705	+90	+12
53 Geminorum	6.3	1.56	6.3	28 5.0	20 24.9	+ 9 15.3	-0.5248	0.6153	0.0767	+14	-50
59 Geminorum	6.9	1.58	5.9	27 50.6	23 28.2	-11 49.6	-0.5379	0.6138	0.0871	+14	-51
ι Geminorum	4.0	1.59	5.8	28 0.6	23 53.3	-11 25.6	-0.7372	0.6138	0.0879	+ 2	-62
b^2 Geminorum	6.3	1.60	5.6	28 8.2	20 1 20.4	-10 2.4	-0.9940	0.6132	0.0922	-17	-62
B. A. C. 2472	8.0	+1.60	+ 5.6	+28 7.9	1 38.4	- 9 45.2	-1.0160	0.6130	-0.0943	-18	-62
υ Geminorum	4.3	1.60	5.3	27 7.9	3 32.4	- 7 56.2	-0.2191	0.6116	0.1010	+32	-34
c Geminorum	6.0	1.59	4.8	26 2.3	6 30.0	- 5 6.4	+0.5413	0.6099	0.1110	+81	+ 4
φ Geminorum	5.0	1.63	4.3	27 2.5	9 52.6	- 1 52.6	-0.8358	0.6078	0.1213	- 4	-63
ω^1 Cancri	6.0	1.61	3.9	25 41.1	12 36.3	+ 0 44.1	+0.1522	0.6056	0.1305	+53	-17
ω^2 Cancri	6.3	+1.61	+ 3.8	+25 22.9	12 54.2	+ 1 1.2	+0.4107	0.6056	-0.1309	+70	- 4
ψ^1 Cancri	6.8	1.63	3.2	26 9.3	16 0.4	+ 3 59.4	-0.7693	0.6034	0.1405	+ 1	-65
ψ^2 Cancri	5.7	1.63	3.2	25 49.7	16 6.1	+ 4 4.8	-0.4616	0.6034	0.1406	+18	-51
λ Cancri	5.7	1.61	2.6	24 21.3	19 51.7	+ 7 41.0	+0.4412	0.6001	0.1522	+72	- 5
υ^1 Cancri	6.0	1.63	2.3	24 52.9	22 8.8	+ 9 52.1	-0.4392	0.5982	0.1585	+20	-51
υ^2 Cancri	5.8	+1.62	+ 2.3	+24 29.8	22 53.1	+10 34.9	-0.1786	0.5973	-0.1608	+34	-37
υ^3 Cancri	6.0	1.63	2.0	24 26.3	23 58.8	+11 37.7	-0.3000	0.5962	0.1638	+28	-44
υ^4 Cancri	5.7	1.63	+ 1.8	24 26.7	21 0 32.5	-11 49.9	-0.3985	0.5957	0.1663	+22	-50
ξ Cancri	5.0	1.58	- 0.2	22 28.4	14 38.2	+ 1 41.5	-1.0510	0.5817	0.2012	-17	-68
79 Cancri	6.3	1.58	0.2	22 25.6	15 1.8	+ 2 4.2	-1.0830	0.5815	0.2020	-20	-68
B. A. C. 3138	6.3	+1.56	- 0.3	+21 43.2	16 20.5	+ 3 19.8	-0.6524	0.5803	-0.2049	+ 9	-67
B. A. C. 3206	6.3	1.53	0.9	20 14.7	20 50.4	+ 7 39.2	-0.1387	0.5751	0.2146	+36	-41
26 Leonis	7.7	1.41	2.3	15 43.6	22 10 47.1	- 2 55.4	+1.1710	0.5576	0.2383	+90	+29
37 Leonis	5.7	1.34	3.2	14 15.3	18 47.3	+ 4 47.5	+0.6873	0.5524	0.2509	+90	- 4
B. A. C. 3579	7.2	1.31	3.9	14 53.0	23 0 9.3	+ 9 58.3	-1.0360	0.5476	0.2569	-37	-75
l Leonis	5.3	+1.21	- 4.3	+11 6.3	9 27.1	- 5 2.9	+0.0555	0.5387	-0.2663	+47	-38

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JANUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 3837	6.3	+1.07	- 4.8	+ 8 38.2	**23** 21 3.9	+ 6 10.8	-0.5795	0.5297	-0.2732	+15	-76
σ Leonis	4.1	1.04	4.9	6 36.5	**24** 0 28.7	+ 9 29.2	+0.5494	0.5272	0.2754	+78	-15
β Virginis	3.7	0.88	5.2	+ 2 21.6	14 52.7	- 0 34.1	+0.9196	0.5177	0.2783	+90	+ 4
13 Virginis	6.1	0.73	5.6	- 0 12.0	**25** 4 58.5	-10 53.9	-0.3465	0.5116	0.2768	+27	-64
η Virginis	4.0	0.72	5.7	0 4.8	5 36.5	-10 17.1	-0.6463	0.5109	0.2713	+11	-86
α Virginis	1.5	+0.32	- 4.8	-10 36.6	**26** 15 12.3	- 1 40.9	+1.4140	0.5056	-0.2569	+79	+52
h Virginis	5.8	0.29	5.4	9 37.2	19 14.4	+ 2 14.1	-0.6738	0.5056	0.2540	+ 8	-89
86 Virginis	5.9	0.20	5.1	11 53.8	**27** 1 55.7	+ 8 43.5	+0.0821	0.5062	0.2468	+45	-40
B. A. C. 4700	5.6	+0.05	4.5	15 48.2	14 41.8	- 2 53.1	+1.2170	0.5084	0.2330	+74	+27
10 Libræ	6.5	-0.17	5.0	17 55.2	**28** 11 25.8	- 6 46.4	-1.0340	0.5145	0.2039	-21	-90
42 Libræ	5.7	-0.45	- 4.5	-23 28.5	**29** 11 7.0	- 7 49.5	+0.6670	0.5238	-0.1640	+65	- 7
B. A. C. 5197	6.0	0.48	4.4	24 23.1	13 45.9	- 5 15.6	+1.2440	0.5250	0.1587	+66	+37
B. A. C. 5253	5.8	0.48	4.7	24 13.1	17 37.8	- 1 31.2	+0.4609	0.5267	0.1511	+53	-19
B. A. C. 5254	5.8	0.50	4.9	23 39.8	17 39.6	- 1 29.4	-0.1543	0.5267	0.1511	+21	-53
3 Scorpii	6.7	0.50	4.5	24 55.8	17 58.9	- 1 10.7	+1.1920	0.5267	0.1508	+65	+32
B. A. C. 5314	5.7	-0.53	- 4.6	-25 34.2	22 6.0	+ 2 48.4	+1.2960	0.5286	-0.1425	+64	+49
σ Scorpii	3.4	0.62	5.5	25 20.4	**30** 6 30.1	+10 56.2	-0.0811	0.5323	0.1244	+22	-49
α Scorpii	1.4	0.66	5.4	26 11.9	10 19.2	- 9 23.9	+0.4094	0.5340	0.1169	+47	-22
22 Scorpii	5.5	0.67	5.8	24 53.0	10 43.1	- 8 58.2	-1.0910	0.5342	0.1154	-36	-90
B. A. C. 5800	7.5	0.83	6.4	26 51.5	**31** 6 53.3	+10 30.4	-0.7750	0.5414	0.0690	-20	-90
A Ophiuchi	4.9	-0.83	- 6.6	-26 26.9	7 25.8	+11 1.8	-1.2650	0.5418	-0.0677	-58	-74
38 Ophiuchi	6.7	0.84	6.6	26 30.9	8 26.7	-11 59.4	-1.2600	0.5419	0.0651	-58	-74
43 Ophiuchi	5.8	0.87	6.4	28 2.5	10 59.5	- 9 31.8	+0.2774	0.5425	0.0592	+34	-28
3 Sagittarii *var.*	5.0	-0.94	- 7.1	-27 47.5	21 53.7	+ 1 0.0	-0.4979	0.5451	-0.0320	- 8	-78
FEBRUARY.											
B. A. C. 6127	5.1	-1.00	- 7.6	-28 28.2	**1** 7 4.1	+ 9 51.5	+0.0685	0.5462	-0.0091	+18	-40
φ Sagittarii	3.7	1.05	8.9	27 6.2	23 54.1	+ 2 6.6	-1.2340	0.5466	+0.0340	-57	-79
τ Sagittarii	3.6	1.08	9.4	27 49.7	**2** 9 27.0	+11 19.8	+0.0111	0.5479	0.0582	+21	-44
B. A. C. 6628	5.9	1.09	9.8	28 4.4	17 22.3	- 5 1.2	+0.8181	0.5438	0.0783	+62	+ 5
B. A. C. 6666	5.8	-1.09	-10.0	-27 12.3	19 49.5	- 2 39.0	+0.0535	0.5434	+0.0836	+24	-41
ω Sagittarii	5.1	1.10	10.5	26 35.0	**3** 7 42.5	+ 8 49.9	+0.5252	0.5399	0.1116	+53	-15
A Sagittarii	5.3	1.10	10.5	26 29.1	9 9.4	+10 13.8	+0.5802	0.5393	0.1144	+57	-12
				NEW	*MOON.*						
50 Aquarii	6.1	0.96	10.3	14 4.2	**6** 8 29.7	+ 7 19.6	+0.0584	0.5093	0.2378	+42	-41
B. A. C. 7835	6.5	-0.95	-10.1	-13 27.7	11 23.2	+10 8.0	+0.0849	0.5082	+0.2408	+44	-40
65 Aquarii	7.0	0.93	9.6	10 39.7	18 2.1	- 7 25.0	-1.3200	0.5063	0.2475	-39	-90
70 Aquarii	6.2	0.92	9.5	11 7.1	21 4.3	- 4 27.8	-0.0702	0.5055	0.2503	+38	-48
Lalande 44734	6.8	0.91	9.4	10 37.5	23 17.4	- 2 18.7	-0.0450	0.5048	0.2523	+39	-47
h^1 Aquarii	5.4	0.90	8.9	8 16.1	**7** 5 52.1	+ 4 4.7	-0.9086	0.5035	0.2575	- 6	-90
h^2 Aquarii	7.4	-0.90	- 8.9	- 8 19.8	5 57.0	+ 4 9.4	-0.8224	0.5035	+0.2577	0	-90
h^3 Aquarii	7.0	0.90	8.9	8 30.6	6 15.0	+ 4 26.8	-0.5493	0.5035	0.2578	+14	-78
h^4 Aquarii	8.0	0.89	8.9	8 16.1	6 57.1	+ 5 7.7	-0.6282	0.5030	0.2583	+11	-85
χ Aquarii	5.3	0.86	8.7	8 18.4	12 4.3	+10 6.1	+0.7437	0.5025	0.2616	+80	- 6
B. A. C. 8184	6.3	0.85	7.7	5 7.0	18 49.1	- 7 20.7	-0.9026	0.5016	0.2655	- 4	-90
20 Piscium	5.5	-0.81	- 6.9	- 3 21.2	**8** 4 37.7	+ 2 11.2	-0.1620	0.5009	+0.2696	+36	-53
24 Piscium	6.1	0.79	6.4	3 44.7	7 17.0	+ 4 45.9	+0.9750	0.5012	0.2705	+86	+ 7
Lalande 47041	7.1	0.78	5.5	- 0 52.2	10 56.2	+ 8 18.8	-1.1040	0.5016	0.2714	-16	-90
44 Piscium	5.9	0.72	4.0	+ 1 21.0	**9** 0 29.9	- 2 30.9	+0.2316	0.5034	0.2728	+57	-33
B. A. C. 221	5.9	0.68	1.9	4 44.1	12 27.7	+ 9 6.0	-0.0950	0.5067	0.2710	+39	-49
B. A. C. 274	6.2	-0.64	1.2	+ 5 45.7	18 24.8	- 9 7.4	+0.2721	0.5090	+0.2692	+59	-30
70 Piscium	8.0	0.64	- 0.7	7 22.1	19 34.8	- 7 59.5	-0.9477	0.5094	0.2688	- 6	-83
ε Piscium	4.2	0.64	0.7	7 19.2	20 0.7	- 7 34.3	-0.7807	0.5094	0.2686	+ 4	-76
ζ Piscium	4.8	0.59	- 0.4	7 0.9	**10** 1 30.1	- 2 14.9	+1.0070	0.5121	0.2661	+90	+11
π Piscium	5.7	0.53	+ 1.9	11 36.0	13 11.1	+ 9 4.8	-0.7300	0.5181	0.2585	+ 6	-78
B. A. C. 490	7.5	-0.52	+ 1.9	+11 32.2	13 27.8	+ 9 21.0	-0.5923	0.5187	+0.2583	+14	-75

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
19 Arietis	5.7	−0.37	+ 4.2	+14 47.1	11 6 30.5	+ 1 51.3	+0.2958	0.5307	+0.2416	+61	−24
27 Arietis	6.3	0.29	5.6	17 14.2	14 47.3	+ 9 51.7	−0.2843	0.5373	0.2310	+29	−51
36 Arietis	6.5	0.22	6.2	17 19.0	20 53.2	− 8 14.8	+1.0140	0.5425	0.2221	+90	+19
40 Arietis	6.3	0.20	6.5	17 50.6	22 46.3	− 6 25.6	+0.8847	0.5442	0.2191	+90	+11
47 Arietis	6.0	0.16	7.6	20 14.7	12 2 58.1	− 2 22.5	−0.6823	0.5478	0.2121	+ 8	−70
ζ Arietis	4.7	−0.06	+ 8.2	+20 39.2	10 18.0	+ 4 41.8	+0.4051	0.5547	+0.1986	+69	−13
τ^1 Arietis	5.0	−0.02	8.4	20 46.0	13 0.3	+ 7 18.2	+0.8177	0.5573	0.1931	+90	+10
B. A. C. 1055	6.8	0.00	8.8	21 40.1	14 24.8	+ 8 39.7	+0.1655	0.5593	0.1904	+54	−24
66 Arietis	6.0	+0.02	9.1	22 26.4	16 2.3	+10 13.6	−0.3188	0.5604	0.1828	+27	−48
9 Tauri	7.0	0.12	9.6	22 51.7	19 36.4	−10 20.2	−0.0953	0.5641	0.1795	+39	−35
g Pleiadum	6.3	+0.14	+ 9.9	+23 57.5	22 50.2	− 7 13.6	−0.6460	0.5668	+0.1720	+10	−64
17 Tauri	4.3	0.14	9.9	23 47.0	22 51.9	− 7 12.0	−0.4624	0.5668	0.1720	+19	−54
18 Tauri	6.3	0.14	10.1	24 30.6	22 59.0	− 7 5.2	−1.1830	0.5668	0.1719	−30	−65
19 Tauri	5.0	0.14	10.0	24 8.2	22 59.8	− 7 4.4	−0.8007	0.5668	0.1719	0	−66
20 Tauri	5.0	0.15	10.0	24 2.4	23 15.2	− 6 49.6	−0.6580	0.5669	0.1716	+ 8	−64
21 Tauri	7.0	+0.15	+10.0	+24 13.6	23 17.0	− 6 47.9	−0.8431	0.5669	+0.1712	− 3	−66
22 Tauri	7.0	0.15	10.0	24 12.0	23 20.6	− 6 44.4	−0.8056	0.5670	0.1710	− 1	−66
23 Tauri	4.7	0.15	9.8	23 37.3	23 28.0	− 6 37.2	−0.1954	0.5676	0.1706	+33	−40
24 Tauri	8.0	0.16	9.9	23 47.5	23 53.1	− 6 13.1	−0.2974	0.5678	0.1697	+28	−45
η Tauri	3.0	0.16	9.9	23 46.8	23 56.3	− 6 10.1	−0.2770	0.5679	0.1696	+29	−44
B. A. C. 1170	6.3	+0.17	+ 9.7	+23 5.9	13 0 18.3	− 5 48.8	+0.4803	0.5679	+0.1688	+75	− 5
B. A. C. 1171	7.8	0.16	10.0	24 1.4	0 21.1	− 5 46.1	−0.4554	0.5680	0.1686	+19	−54
26 Tauri	7.0	0.17	9.9	23 32.1	0 32.6	− 5 35.0	+0.0747	0.5687	0.1682	+49	−26
27 Tauri	4.0	0.17	9.9	23 43.9	0 37.7	− 5 30.2	−0.1104	0.5687	0.1680	+38	−35
28 Tauri	6.2	0.17	9.9	23 48.9	0 38.2	− 5 29.7	−0.1936	0.5687	0.1680	+33	−39
36 Tauri	6.0	+0.28	+10.1	+23 49.0	6 47.5	+ 0 25.5	+0.7930	0.5744	+0.1529	+90	+14
χ Tauri	5.7	0.40	10.7	25 22.9	13 59.8	+ 7 20.9	+0.2367	0.5809	0.1341	+59	−14
W. iv, 1421	6.0	0.74	11.5	27 54.0	14 8 0.3	+ 0 37.3	−0.3642	0.5953	0.6807	+25	−43
22 Aurigæ	7.0	0.84	11.7	28 50.5	13 4.6	+ 5 28.8	−0.9434	0.5982	0.0643	−12	−61
β Tauri	2.0	0.85	11.5	28 31.2	14 9.7	+ 6 31.2	−0.5512	0.5992	0.0608	+13	−50
B. A. C. 1772	6.3	+0.96	+11.4	+29 9.5	18 57.8	+11 7.1	−0.9383	0.6017	+0.0448	−12	−61
136 Tauri	5 3	1.05	10.7	27 35.4	15 0 6.6	− 7 57.3	+0.8198	0.6036	+0.0272	+90	+27
κ Aurigæ	4.7	1.21	10.7	29 32.4	8 5.6	− 0 18.9	−1.0230	0.6061	−0.0003	−19	−60
49 Aurigæ	5.7	1.31	9.6	28 6.5	15 17.6	+ 6 34.4	+0.3134	0.6068	0.0254	+64	0
53 Aurigæ	6.0	1.36	9.6	29 4.7	16 25.7	+ 7 39.5	−0.6850	0.6070	0.0294	+ 5	−58
54 Aurigæ	6.0	+1.35	+ 9.4	+28 21.6	16 51.8	+ 8 4.5	+0.0183	0.6070	−0.0309	+45	−16
25 Geminorum	6.5	1.36	9.3	28 17.8	17 30.9	+ 8 41.9	+0.0615	0.6070	0.0332	+48	−13
28 Geminorum	6.0	1.39	9.4	29 4.8	18 44.2	+ 9 52.1	−0.7630	0.6068	0.0376	0	−61
W. vi, 1656	8.2	1.46	8.0	26 59.6	16 1 41.2	− 7 29.0	+0.9709	0.6059	0.0616	+90	+34
47 Geminorum	6.0	1.50	7.7	27 1.9	4 26.4	− 4 51.0	+0.7499	0.6052	0.0710	+90	+19
53 Geminorum	6.3	+1.54	+ 7.7	+28 5.0	6 5.2	− 3 16.4	−0.4180	0.6049	−0.0766	+21	−43
59 Geminorum	6.9	1.58	7.2	27 50.6	9 14.2	− 0 15.6	−0.4378	0.6039	0.0872	+20	−45
ι Geminorum	4.0	1.58	7.2	28 0.6	9 40.1	+ 0 9.3	−0.6416	0.6037	0.0887	+ 8	−58
b^1 Geminorum	5.3	1.61	7.1	28 20.3	10 59.0	+ 1 24.8	−1.0870	0.6033	0.0930	−24	−62
b^2 Geminorum	6.3	1.61	7.0	28 8.2	11 9.7	+ 1 35.0	−0.9055	0.6033	0.0937	− 9	−62
B. A. C. 2472	8.0	+1.61	+ 7.0	+28 7.9	11 28.4	+ 1 52.9	−0.9281	0.6030	−0.0946	−11	−62
υ Geminorum	4.3	1.62	6.5	27 7.9	13 25.6	+ 3 45.1	−0.1243	0.6020	0.1011	+37	−29
c Geminorum	6.0	1.64	5.7	26 2.3	16 28.3	+ 6 40.0	+0.6395	0.6006	0.1109	+90	+ 9
φ Geminorum	5.0	1.69	5.4	27 2.5	19 56.6	+ 9 59.6	−0.7619	0.5988	0.1219	+ 1	−63
ω^1 Cancri	6.0	1.70	4.8	25 41.1	22 44.7	−11 19.4	+0.2319	0.5973	0.1305	+58	−14
ω^2 Cancri	6.3	+1.70	+ 4.7	+25 22.9	23 3.1	−11 1.7	+0.4935	0.5969	−0.1315	+77	0
ψ^1 Cancri	6.8	1.74	4.4	26 9.4	17 2 14.0	− 7 58.8	−0.7104	0.5951	0.1411	+ 4	−64
ψ^2 Cancri	5.7	1.74	4.3	25 49.8	2 19.9	− 7 53.2	−0.3991	0.5948	0.1415	+22	−47
λ Cancri	5.7	1.75	3.5	24 21.4	6 10.9	− 4 11.7	+0.4984	0.5924	0.1527	+77	− 2
υ^1 Cancri	6.0	1.77	3.2	24 53.0	8 31.1	− 1 57.3	−0.3891	0.5903	0.1593	+23	−48
υ^2 Cancri	5.8	+1.77	+ 3.0	+24 29.8	9 16.4	− 1 13.8	−0.1259	0.5903	−0.1613	+37	−35

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

FEBRUARY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
ν^3 Cancri	6.0	+1.78	+ 2.9	+24 26.3	17 10 23.6	- 0 9.3	-0.2484	0.5892	-0.1644	+30	-41
ν^4 Cancri	5.7	1.78	2.8	24 26.7	10 58.0	+ 0 23.9	-0.3512	0.5887	0.1660	+25	-47
ξ Cancri	5.0	1.84	0.1	22 28.4	18 1 19.3	- 9 49.2	-1.0420	0.5769	0.2020	-16	-68
79 Cancri	6.3	1.84	+ 0.1	22 25.6	1 43.3	- 9 26.1	-1.0760	0.5765	0.2029	-19	-68
B. A. C. 3138	6.3	1.83	- 0.2	21 43.2	3 3.2	- 8 9.3	-0.6471	0.5754	0.2059	+ 9	-67
B. A. C. 3206	6.3	+1.83	- 1.0	+20 14.7	7 36.8	- 3 46.1	-0.1395	0.5716	-0.2157	+37	-41
26 Leonis	7.7	1.74	3.5	15 43.5	21 41.2	+ 9 47.0	+1.1490	0.5591	0.2414	+90	+27
37 Leonis	5.7	1.72	4 7	14 15.3	19 5 43.3	- 6 28.3	+0.6330	0.5524	0.2532	+86	- 7
l Leonis	5.3	1.68	6.6	11 6.6	20 22.1	+ 7 40.2	-0.0336	0.5408	0.2693	+42	-43
B. A. C. 3837	6.3	1.63	7.7	8 38.2	20 7 53.9	- 5 10.8	-0.6956	0.5328	0.2774	+ 9	-81
σ Leonis	4.1	+1.59	- 8.0	+ 6 36.4	11 16.6	- 1 54.7	+0.4230	0.5307	-0.2791	+69	-22
β Virginis	3.7	1.47	8.9	+ 2 21.6	21 1 29.1	+11 50.5	+0.7553	0.5232	0.2828	+90	- 5
13 Virginis	6.1	1.38	9.8	- 0 12.1	15 19.6	+ 1 15.3	-0.5259	0.5176	0.2816	+18	-76
η Virginis	4.0	1.38	9.8	0 4.9	15 56.8	+ 1 51.3	-0.8250	0.5174	0.2816	+ 2	-90
B. A. C. 4394	6.0	1.17	9.8	8 25.2	22 16 21.9	+ 1 31.9	+1.0940	0.5129	0.2691	+82	+15
α Virginis	1.5	+1.10	- 9.8	-10 36.7	23 0 45.8	+ 9 40.6	+1.1700	0.5126	-0.2621	+79	+22
h Virginis	5.8	1.08	10.3	9 37.3	4 41.8	-10 30.5	-0.8969	0.5128	0.2583	- 5	-90
86 Virginis	5.9	1.01	9.9	11 53.9	11 13.0	- 4 11.2	-0.1537	0.5134	0.2517	+33	-53
B. A. C. 4700	5.6	0.90	9.4	15 48.3	23 40.0	+ 7 53.1	+0.9605	0.5151	0.2365	+74	+ 8
10 Libræ	6.5	0.74	9.4	17 55.3	24 19 54.6	+ 3 30.2	-1.2700	0.5204	0.2068	-41	-87
42 Libræ	5.7	+0.51	- 8.2	-23 28.5	25 19 7.4	+ 1 58.7	+0.4200	0.5281	-0.1649	+52	-21
B. A. C. 5197	6.0	0.49	8.0	24 23.1	21 43.7	+ 4 30.0	+0.9919	0.5290	0.1598	+66	+13
A Scorpii (2d star)	5.2	0.45	7.8	25 0.7	26 1 22.8	+ 8 1.9	+1.1080	0.5304	0.1524	+65	+23
B. A. C. 5253	5.8	0.45	8.1	24 13.1	1 31.8	+ 8 10.6	+0.2187	0.5304	0 1520	+40	-32
B. A. C. 5254	5.8	0.45	8.3	23 39.8	1 33.4	+ 8 12.2	-0.3918	0.5304	0.1520	+ 9	-69
B. A. C. 5255	6.0	+0.45	- 7.8	-25 5.7	1 39.6	+ 8 18.3	+1.1590	0.5306	-0.1517	+65	+28
3 Scorpii	6.7	0.45	7.9	24 55.8	1 52.5	+ 8 30.6	+0.9443	0.5306	0.1513	+65	+10
B. A. C. 5347	6.0	0.39	7.7	26 2.6	8 8.3	- 9 26.0	+1.2590	0.5327	0.1379	+64	+42
σ Scorpii	3.4	0.33	8.0	25 20.4	14 12.9	- 3 33.4	-0.3112	0.5348	0.1248	+10	-63
α Scorpii	1.4	0.30	7.9	26 11.9	17 59.1	+ 0 5.3	+0.1777	0.5362	0.1163	+34	-34
B. A. C. 5800	7.5	+0.12	- 7.9	-26 51.5	27 14 21.6	- 4 13.5	-0.9815	0.5417	-0.0681	-33	-90
43 Ophiuchi	5.8	+0.08	7.5	28 2.5	18 26.3	- 0 17.3	+0.0663	0.5425	0.0580	+23	-40
3 Sagittarii *var.*	5.0	-0.02	7.7	27 47.5	28 5 17.3	+10 11.3	-0.6920	0.5443	0.0310	-22	-90
γ^1 Sagittarii *var.*	6.0	0.08	7.2	29 35.1	13 2.5	- 6 19.6	+1.1300	0.5450	0.0113	+60	+30
B. A. C. 6127	5.1	-0.09	- 7.6	-28 28.2	14 26.0	- 4 59.0	-0.1181	0.5451	-0.0078	+ 8	-52
					MARCH.						
τ Sagittarii	3.6	-0.29	- 8.0	-27 49.6	1 16 48.0	- 3 31.6	-0.1495	0.5428	+0.0590	+12	-53
B. A. C. 6628	5.9	0.34	7.9	28 4.3	2 0 44.0	+ 4 8.1	+0.6676	0.5417	0.0786	+59	- 6
B. A. C. 6666	5.8	-0.36	- 8.1	-27 12.2	3 11.4	+ 6 30.5	-0.0922	0.5412	+0.0846	+17	-50
ω Sagittarii	5.1	0.43	8.3	26 34.9	15 5.3	- 5 59.6	+0.3956	0.5378	0.1124	+46	-22
A Sagittarii	5.3	0.44	8.3	26 29.0	16 32.5	- 4 35.4	+0.4507	0.5374	0.1159	+49	-19
B. A. C. 7077	6.4	0.52	8.4	25 18.2	3 8 25.8	+10 46.4	+1.2660	0.5314	0.1503	+65	+41
B. A. C. 7325	6.9	0.59	9.2	20 36.4	4 0 43.8	+ 2 33.0	-1.1730	0.5252	0.1821	-35	-90
χ Capricorni	5.4	-0.59	- 8.9	-21 37.3	1 37.0	+ 3 24.6	+0.1003	0.5247	+0.1837	+37	-39
26 Capricorni	7.0	0.60	9.1	20 37.4	1 58.2	+ 3 45.1	-0.9262	0.5246	0.1842	-17	-90
27 Capricorni	6.5	0.60	9.1	20 59.0	2 5.8	+ 3 52.4	-0.5088	0.5243	0.1844	+ 7	-75
φ Capricorni	5.5	0.61	8.9	21 5.6	5 4.4	+ 6 45.4	+0.1676	0.5231	0.1898	+41	-36
33 Capricorni	5.7	0.62	8.7	21 18.2	9 15.6	+10 48.8	+1.2060	0.5216	0.1968	+69	+30
ε Capricorni	4.7	-0.65	- 8.8	-19 56.6	15 40.4	- 6 58.3	+1.0160	0.5190	+0.2073	+70	+13
κ Capricorni	5 0	0.66	8.8	19 21.1	18 27.1	- 4 16.8	+0.9539	0.5181	0.2116	+71	+ 8
29 Aquarii (*mean.*)	6.5	0.69	8.8	17 28.6	5 4 25.8	+ 5 23.6	+1.1010	0.5144	0.2260	+73	+18
39 Aquarii	6.4	0.72	8.9	-14 43.0	9 32.7	+10 21.3	-0.7160	0.5129	0.2329	+ 2	-90
				NEW	*MOON.*						
44 Piscium	5.9	-0.81	- 4.3	+ 1 21.0	8 6 52.5	+ 5 39.1	+0.3214	0.5079	+0.2768	+62	-28

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0. $\Delta\alpha$	Red'ns from 1894.0. $\Delta\delta$	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'.	y'	N.	S.
		s	″	° ′	d h m	h m				°	°
B. A. C. 221	5.9	-0.82	- 3.0	+ 4 44.0	**8** 18 38.6	- 6 55.6	+0.0122	0.5114	+0.2749	+45	-43
B. A. C. 274	6.2	0.80	2.3	5 54.7	**9** 0 30.0	- 1 14.7	+0.3821	0.5136	0.2729	+66	-24
70 Piscium	8.0	0.82	2.0	7 22.1	1 38.9	- 0 7.9	-0.8285	0.5141	0.2725	+ 1	-83
ε Piscium	4.2	0.81	1.9	7 19.2	2 4.4	+ 0 16.8	-0.6610	0.5141	0.2724	+11	-82
ζ Piscium	4.8	0.78	- 1.6	7 0.9	7 28.6	+ 5 31.1	+1.1210	0.5169	0.2697	+90	+19
π Piscium	5.7	-0.77	+ 0.4	+11 36.0	18 59.6	- 7 19.3	-0.5965	0.5226	+0.2616	+14	-75
B. A. C. 490	7.5	0.77	0.4	11 32.2	19 16.0	- 7 3.3	-0.4594	0.5229	0.2614	+21	-67
19 Arietis	5.7	0.68	2.7	14 47.0	**10** 12 6.5	+ 9 14.6	+0.4397	0.5335	0.2440	+71	-17
27 Arietis	6.3	0.63	3.9	17 14.2	20 18.9	- 6 49.4	-0.1393	0.5400	0.2430	+37	-44
B. A. C. 782	7.0	0.63	4.4	18 24.8	21 31.5	- 5 39.3	-1.0710	0.5409	0.2311	-16	-72
36 Arietis	6.5	-0.57	+ 4.8	+17 19.0	**11** 2 22.2	- 0 58.4	+1.1610	0.5446	+0.2232	+90	+29
40 Arietis	6.3	0.56	5.0	17 50.6	4 14.6	+ 0 50.1	+1.0270	0.5464	0.2204	+90	+24
47 Arietis	6.0	0.54	6.0	20 14.7	8 25.4	+ 4 52.2	-0.5332	0.5499	0.2131	+16	-63
ζ Arietis	4.7	0.45	6.7	20 39.2	15 44.2	+11 55.4	+0.5560	0.5556	0.1994	+81	- 5
τ^1 Arietis	5.0	0.42	7.0	20 46.0	18 26.3	- 9 28.4	+0.9729	0.5580	0.1937	+90	+20
B. A. C. 1055	6.8	-0.41	+ 7.4	+21 40.1	19 50.9	- 8 6.8	+0.3162	0.5594	+0.1907	+63	-16
66 Arietis	6.0	0.40	7.7	22 26.4	21 28.3	- 6 33.0	-0.1714	0.5604	0.1875	+35	-40
9 Tauri	7.0	0.34	8.3	22 51.7	**12** 1 2.7	- 3 6.5	+0.0546	0.5635	0.1795	+48	-28
g Pleiadum	6.3	0.31	8.9	23 57.4	4 16.8	+ 0 0.5	-0.4964	0.5660	0.1721	+17	-56
17 Tauri	4.3	0.31	8.9	23 46.9	4 18.8	+ 0 2.2	-0.3121	0.5660	0.1719	+27	-46
18 Tauri	6.3	-0.31	+ 9.0	+24 30.5	4 25.8	+ 0 8.9	-1.0350	0.5663	+0.1718	-16	-65
19 Tauri	5.0	0.30	8.9	24 8.2	4 26.2	+ 0 9.3	-0.6515	0.5663	0.1718	+ 9	-64
20 Tauri	5.0	0.30	8.9	24 2.3	4 42.1	+ 0 24.7	-0.5065	0.5663	0.1711	+17	-57
21 Tauri	7.0	0.30	9.0	24 13.5	4 43.8	+ 0 26.3	-0.6924	0.5665	0.1711	+ 6	-66
22 Tauri	7.0	0.30	9.0	24 11.9	4 47.5	+ 0 29.9	-0.6549	0.5665	0.1709	+ 8	-64
23 Tauri	4.7	-0.30	+ 8.8	+23 37.2	4 54.9	+ 0 37.0	-0.0426	0.5666	+0.1707	+42	-32
24 Tauri	8.0	0.29	8.8	23 47.4	5 20.1	+ 1 1.2	-0.1450	0.5670	0.1696	+36	-37
η Tauri	3.0	0.29	8.8	23 46.7	5 23.4	+ 1 4.4	-0.1246	0.5670	0.1694	+37	-36
B. A. C. 1770	6.3	0.28	8.6	23 5.8	5 45.4	+ 1 25.5	+0.6343	0.5673	0.1686	+90	+ 3
B. A. C. 1771	7.8	0.28	9.0	24 1.3	5 48.3	+ 1 28.4	-0.3035	0.5674	0.1685	+28	-45
26 Tauri	7.0	-0.28	+ 8.8	+23 32.0	5 59.8	+ 1 39.4	+0.2285	0.5678	+0.1681	+58	-18
27 Tauri	4.0	0.28	8.9	23 43.8	6 4.9	+ 1 44.3	+0.0400	0.5679	0.1678	+47	-27
28 Tauri	6.2	0.28	8.9	23 48.8	6 5.4	+ 1 44.8	-0.0426	0.5679	0.1678	+42	-31
36 Tauri	6.0	0.18	9.2	23 49.0	12 16.7	+ 7 42.0	+0.9450	0.5727	0.1525	+90	+22
χ Tauri	5.7	-0.07	9.9	25 22.9	19 32.4	- 9 19.2	+0.3859	0.5782	0.1332	+69	- 6
W. iv, 1421	6.0	+0.26	+10.6	+27 54.0	**13** 13 47.1	+ 8 11.6	-0.2224	0.5899	+0.0765	+32	-32
22 Aurigæ	7.0	0.37	11.0	28 50.5	18 56.8	-10 51.5	-0.8121	0.5926	0.0633	- 3	-61
β Tauri	2.0	0.38	10.9	28 31.2	20 3.1	- 9 47.9	-0.4178	0.5928	0.0597	+21	-42
B. A. C. 1772	6.3	0.59	11.7	29 9.5	**14** 0 56.0	- 5 7.1	-0.8117	0.5947	0.0439	- 3	-61
136 Tauri	5.3	0.59	11.0	27 35.4	6 12.4	- 0 4.1	+0.9625	0.5965	+0.0265	+90	+36
κ Aurigæ	4.7	+0.78	+11.4	+29 32.4	14 22.8	+ 7 45.8	-0.9074	0.5977	-0.0010	-10	-60
49 Aurigæ	5.7	0.89	10.6	28 6.5	21 46.3	- 9 9.4	+0.4431	0.5978	0.0258	+74	+ 6
53 Aurigæ	6.0	0.93	10.6	29 4.7	22 56.1	- 8 2.6	-0.5696	0 5977	0.0297	+12	-49
54 Aurigæ	6.0	0.93	10.3	28 21.6	23 23.0	- 7 36.8	+0.1432	0.5977	0.0325	+53	- 9
25 Geminorum	6.5	0.94	10.3	28 17.8	**15** 0 3.1	- 6 58.5	+0.1852	0.5977	0.0335	+56	- 7
28 Geminorum	6.0	+0.97	+10.4	+29 4.9	1 18.5	- 5 46.2	-0.6536	0.5977	-0.0377	+ 7	-56
W. vi, 1656	8.2	1.08	9.1	26 59.7	8 27.5	+ 1 4.8	+1.1010	0.5960	0.0614	+90	+43
47 Geminorum	6.0	1.13	8.9	27 2.0	11 17.7	+ 3 47.9	+0.8750	0.5953	0.0707	+90	+26
53 Geminorum	6.3	1.17	9.0	28 5.0	12 59.5	+ 5 25.4	-0.3113	0.5946	0.0762	+27	-37
59 Geminorum	6.9	1.23	8.6	27 50.6	16 14.3	+ 8 32.1	-0.3313	0.5937	0.0866	+25	-39
ι Geminorum	4.0	+1.24	+ 8.6	+28 0.6	16 41.0	+ 8 57.7	-0.5400	0.5934	-0.0880	+14	-51
b^1 Geminorum	5.3	1.26	8.6	28 20.3	18 2.5	+10 15.9	-0.9938	0.5928	0.0920	-16	-62
b^2 Geminorum	6.3	1.26	8.5	28 8.2	18 13.5	+10 26.4	-0.8072	0.5928	0.0928	- 2	-62
B. A. C. 2472	8.0	1.27	8.5	28 7.9	18 32.7	+10 44.7	-0.8305	0.5927	0.0938	- 4	-62
υ Geminorum	4.3	1.30	8.3	27 7.9	20 33.6	-11 19.3	-0.0185	0.5920	0.1002	+44	-23
c Geminorum	6.0	+1.34	+ 7.2	+26 2.3	23 42.1	- 8 18.6	+0.7546	0.5887	-0.1096	+90	+16

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MARCH.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
φ Geminorum	5.0	+1.41	+ 7.1	+27 2.5	16 3 16.8	- 4 52.6	-0.6689	0.5882	-0.1207	+ 7	-61
ω^1 Cancri	6.0	1.43	6.4	25 41.1	6 10.5	- 2 5.9	+0.3362	0.5873	0.1293	+65	- 8
ω^2 Cancri	6.3	1.43	6.2	25 22.9	6 29.5	- 1 47.6	+0.6017	0.5865	0.1301	+88	+ 5
ψ^1 Cancri	6.8	1.49	6.1	26 9.4	9 46.7	+ 1 21.6	-0.6237	0.5845	0.1397	+10	-60
ψ^2 Cancri	5.7	1.49	6.0	25 49.8	9 52.7	+ 1 27.3	-0.3076	0.5845	0.1398	+27	-42
λ Cancri	5.7	+1.52	+ 5.1	+24 21.4	13 51.3	+ 5 16.5	+0.6001	0.5819	-0.1510	+87	+ 3
υ^1 Cancri	6.0	1.56	4.9	24 53.0	16 16.1	+ 7 35.5	-0.3042	0.5801	0.1575	+27	-44
υ^2 Cancri	5.8	1.56	4.7	24 29.9	17 2.8	+ 8 20.4	-0.0387	0.5794	0.1595	+42	-30
υ^3 Cancri	6.0	1.58	4.5	24 26.4	18 12.2	+ 9 27.1	-0.1664	0.5790	0.1628	+35	-37
υ^4 Cancri	5.7	1.59	4.5	24 26.8	18 47.8	+10 1.3	-0.2689	0.5785	0.1643	+29	-42
ξ Cancri	5.0	+1.81	+ 1.7	+22 28.4	17 9 36.6	+ 0 15.9	-0.9840	0.5671	-0.1996	-12	-68
79 Cancri	6.3	1.83	1.6	22 25.6	10 1.3	+ 0 39.6	-1.0200	0.5670	0.2006	-14	-68
B. A. C. 3138	6.3	1.83	1.2	21 43.2	11 23.7	+ 1 59.0	-0.5821	0.5658	0.2035	+13	-64
B. A. C. 3206	6.3	1.74	+ 0.2	20 14.7	16 5.7	+ 6 30.5	-0.2134	0.5622	0.2134	+40	-38
26 Leonis	7.7	1.78	- 2.9	15 43.5	18 6 34.3	- 3 32.0	+1.2110	0.5500	0.2387	+90	+32
37 Leonis	5.7	+1.80	- 4.3	+14 15.3	14 48.9	+ 4 25.3	+0.6813	0.5451	-0.2513	+90	- 4
l Leonis	5.3	1.81	6.8	11 6.3	19 5 47.2	- 5 6.6	-0.0136	0.5352	0.2679	+44	-42
χ Leonis	4.8	1.80	8.0	7 54.4	13 14.7	+ 2 6.2	+1.2240	0.5308	0.2739	+90	+27
B. A. C. 3837	6.3	1.82	8.4	8 38.2	17 31.0	+ 6 14.3	-0.6960	0.5285	0.2765	+ 9	-81
σ Leonis	4.1	1.80	8.9	6 36.4	20 56.8	+ 9 33.4	+0.4259	0.5270	0.2786	+69	-22
β Virginis	3.7	+1.76	-10.7	+ 2 21.5	20 11 18.7	- 0 31.7	+0.7381	0.5213	-0.2731	+90	- 6
13 Virginis	6.1	1.74	11.9	- 0 12.1	21 1 13.8	-11 2.4	-0.5598	0.5175	0.2825	+16	-78
η Virginis	4.0	1.74	12.0	0 4.9	1 51.2	-10 26.2	-0.8596	0.5172	0.2824	0	-90
B. A. C. 4394	6.0	1.65	13.1	8 25.2	22 2 13.4	-10 48.5	+1.0340	0.5154	0.2713	+82	+11
α Virginis	1.5	1.62	13.3	10 36.7	10 33.7	- 2 43.5	+1.1010	0.5159	0.2644	+79	+16
k Virginis	5.8	+1.62	-13.6	- 9 37.3	14 27.6	+ 1 3.2	-0.9683	0.5163	-0.2608	- 9	-90
86 Virginis	5.9	1.59	13.5	11 53.9	20 54.7	+ 7 18.5	-0.2288	0.5171	0.2543	+29	-57
B. A. C. 4700	5.6	1.54	13.2	15 48.3	23 9 12.2	- 4 46.7	+0.8748	0.5199	0.2394	+74	+ 2
42 Libræ	5.7	1.33	11.5	23 28.6	25 3 58.5	-11 22.2	+0.3253	0.5333	0.1666	+47	-27
B. A. C. 5197	6.0	1.32	11.1	24 23.2	6 32.2	- 8 53.6	+0.8921	0.5344	0.1614	+66	+ 6
A Scorpii (2d star)	5.2	+1.29	-10.9	-25 0.8	10 7.9	- 5 25.0	+1.0070	0.5355	-0.1538	+65	+15
B. A. C. 5253	5.8	1.29	11.1	24 13.2	10 16.8	- 5 16.5	+0.1232	0.5357	0.1535	+35	-38
B. A. C. 5254	5.8	1.30	11.3	23 39.9	10 18.4	- 5 14.9	-0.4856	0.5353	0.1535	+ 4	-76
B. A. C. 5255	6.0	1.30	10.9	25 5.8	10 24.4	- 5 9.1	+1.0560	0.5356	0.1533	+65	+18
3 Scorpii	6.7	1.30	10.9	24 55.9	10 37.1	- 4 56.9	+0.8445	0.5356	0.1528	+65	+ 4
B. A. C. 5347	6.0	+1.26	-10.5	-26 2.7	16 47.2	+ 1 0.9	+1.1530	0.5374	-0.1393	+64	+28
σ Scorpii	3.4	1.22	10.6	25 20.5	22 46.4	+ 6 48.0	-0.4041	0.5393	0.1258	+ 5	-70
α Scorpii	1.4	1.20	10.2	26 12.0	26 2 29.4	+10 23.4	+0.0857	0.5405	0.1172	+29	-40
B. A. C. 5800	7.5	1.06	9.1	26 51.5	22 37.1	+ 5 49.7	-1.0730	0.5446	0.0684	-39	-90
43 Ophiuchi	5.8	1.03	8.6	28 2.5	27 2 39.3	+ 9 43.5	-0.0208	0.5453	0.0582	+18	-45
3 Sagittarii *var.*	5.0	+0.94	- 8.3	-27 47.5	13 24.8	- 3 53.4	-0.7807	0.5461	-0.0309	-24	-90
γ^1 Sagittarii *var.*	6.0	0.89	7.3	29 35.1	21 7.3	+ 3 33.0	+1.0370	0.5462	0.0110	+60	+20
B. A. C. 6127	5.1	0.86	7.6	28 28.2	22 30.4	+ 4 53.2	-0.2045	0.5463	-0.0099	+ 4	-57
τ Sagittarii	3.6	0.62	6.5	27 49.6	29 0 49.0	+ 6 17.1	-0.2287	0.5423	+0.0594	+ 8	-58
B. A. C. 6628	5.9	0.55	6.0	28 4.3	8 45.7	-10 2.5	+0.5917	0.5406	0.0787	+55	-11
B. A. C. 6666	5.8	+0.52	- 6.2	-27 12.2	11 13.4	- 7 39.8	-0.1677	0.5394	+0.0846	+13	-55
ω Sagittarii	5.1	0.41	5.8	26 34.9	23 9.9	+ 3 52.7	+0.3221	0.5353	0.1124	+42	-27
A Sagittarii	5.3	0.39	5.8	26 29.0	30 0 37.3	+ 5 17.2	+0.3808	0.5347	0.1157	+45	-23
B. A. C. 7077	6.4	0.25	5.3	25 18.2	16 35.7	- 3 15.9	+1.2030	0.5285	0.1498	+65	+33
B. A. C. 7325	6.9	0.07	6.0	20 36.4	31 8 59.8	-11 23.2	-1.2300	0.5219	0.1814	-40	-90
χ Capricorni	5.4	+0.08	- 5.6	-21 37.3	9 53.3	-10 31.4	+0.0402	0.5216	+0.1831	+34	-42
26 Capricorni	7.0	0.06	5.9	20 37.4	10 14.6	-10 10.7	-0.9833	0.5212	0.1835	-20	-90
27 Capricorni	6.5	0.07	5.8	20 59.0	10 22.7	-10 2.9	-0.5633	0.5210	0.1840	+ 4	-82
φ Capricorni	5.5	0.04	5.6	21 5.7	13 22.1	- 7 9.1	+0.1148	0.5200	0.1892	+39	-38
33 Capricorni	5.7	+0.02	- 5.3	-21 18.2	17 34.7	- 3 4.4	+1.1540	0.5187	+0.1963	+69	+24

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x′*	*y′*	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
ε Capricorni	4.7	−0.04	− 5.3	−19 56.6	1 0 1.8	+ 3 10.9	+0.9681	0.5162	+0.2068	+70	+ 9
κ Capricorni	5.0	0.07	5.3	19 21.1	2 49.5	+ 5 53.5	+0.9088	0 5152	0.2122	+71	+ 5
29 Aquarii (*mean*)	6.5	0.16	5.3	17 28.6	12 51.0	− 8 23.3	+1.0570	0.5121	0.2256	+73	+15
39 Aquarii	6.4	0.22	5.7	14 43.0	17 59.1	− 3 24.4	−0.7607	0.5107	0.2324	0	−90
45 Aquarii	6.3	0.24	5.7	13 50.2	21 21.9	− 0 7.7	−0.9143	0.5098	0.2367	− 9	−90
50 Aquarii	6.1	−0.26	− 5.5	−14 4.1	2 0 9.6	+ 2 34.9	+0.0003	0.5091	+0.2400	+40	−44
B. A. C. 7835	6.5	0.28	5.4	13 27.6	3 2.0	+ 5 22.2	+0.0413	0.5086	0.2433	+42	−42
65 Aquarii	7.0	0.34	5.7	10 39.6	9 47.7	+11 56.0	−1.2960	0.5072	0.2505	−36	−90
70 Aquarii	6.2	0.36	5.4	11 7.0	12 38.2	− 9 18.5	−0.0911	0.5066	0.2532	+37	−49
Lalande 44734	6.8	0.37	5.3	10 37.4	14 49.8	− 7 10.9	−0.0625	0.5066	0.2555	+38	−48
*k*¹ Aquarii	5.4	−0.42	− 5.4	− 8 16.0	21 19.5	− 0 52.5	−0.9024	0.5060	+0.2611	− 5	−90
*k*² Aquarii	7.4	0.42	5.3	8 19.7	21 24.4	− 0 47.8	−0.8151	0.5060	0.2611	0	−90
*k*³ Aquarii	7.0	0.42	5.2	8 30.6	21 42.2	− 0 30.5	−0.5445	0.5058	0.2614	+15	−78
*k*⁴ Aquarii	8.0	0.43	5.2	8 16.1	22 23.6	+ 0 9.7	−0.6209	0.5059	0.2620	+11	−84
χ Aquarii	5.3	0.45	4.9	8 18.4	3 3 26.6	+ 5 3.9	+0.7523	0.5058	0.2659	+79	− 6
MERCURY				− 5 44.2	6 28.4	+ 8 0.5	−1.1790	0.4806	+0.2664	−21	−90
B. A. C. 8184	6.3	−0.51	− 4.9	5 6.7	10 3.6	+11 29.3	−0.8702	0.5059	0.2701	− 2	−90
20 Piscium	5.5	0.57	4.4	3 21.2	19 39.9	− 3 11.3	−0.0111	0.5067	0.2748	+38	−50
24 Piscium	6.1	0.57	4.2	3 44.7	22 15.4	− 0 40.3	+1.0160	0.5071	0.2758	+86	+ 9
Lalande 47041	7.1	0.61	− 4.2	− 0 52.2	4 1 49.2	+ 2 47.2	−1.0030	0.5077	0.2769	−11	−90
				NEW	*MOON.*						
19 Arietis	5.7	−0.79	+ 1.8	+14 47.0	6 19 14.0	− 5 50.2	+0.4455	0.5409	+0.2474	+71	−16
27 Arietis	6.3	0.79	2.8	17 14.1	7 3 14.8	+ 1 54.3	−0.1260	0.5473	0.2346	+38	−43
B. A. C. 782	7.0	0.80	3.1	18 24.7	4 25.7	+ 3 2.5	−1.0480	0.5481	0.2344	−16	−72
36 Arietis	6.5	−0.76	+ 3.6	+17 19.0	9 9.6	+ 7 36.5	+1.1640	0.5521	+0.2266	+90	+30
40 Arietis	6.3	0.75	3.8	17 50.6	10 59.4	+ 9 22.4	+1.0330	0.5537	0.2235	+90	+20
47 Arietis	6.0	0.75	4.6	20 14.7	15 4.3	−10 41.4	−0.5142	0.5572	0.2162	+17	−62
ε Arietis	4.3	0.76	4.7	20 55.1	15 33.4	−10 13.4	−1.0960	0.5573	0.2152	−19	−69
ζ Arietis	4.7	0.70	5.4	20 39.2	22 12.8	− 3 48.6	+0.5624	0.5632	0.2019	+81	− 5
τ¹ Arietis	5.0	−0.68	+ 5.6	+20 46.0	8 0 51.2	− 1 16.0	+0.9736	0.5653	+0.1964	+90	+20
B. A. C. 1055	6.8	0.68	5.9	21 40.1	2 13.8	+ 0 3.6	+0.3250	0.5665	0.1933	+64	−15
66 Arietis	6.0	0.67	6.2	22 26.4	3 49.1	+ 1 35.3	−0.1540	0.5679	0.1899	+36	−39
9 Tauri	7.0	0.63	6.7	22 51.7	7 18.7	+ 4 57.0	+0.0676	0.5705	0.1818	+48	−27
g Pleiadum	6.3	0.60	7.3	23 57.4	10 28.7	+ 7 59.7	−0.4800	0.5733	0.1741	+18	−55
17 Tauri	4.3	−0.60	+ 7.2	+23 46.9	10 30.6	+ 8 1.5	−0.2941	0.5733	+0.1741	+28	−45
18 Tauri	6.3	0.60	7.4	24 30.5	10 37.5	+ 8 8.1	−1.0130	0.5735	0.1740	−15	−65
19 Tauri	5.0	0.60	7.3	24 8.1	10 38.3	+ 8 8.9	−0.6305	0.5735	0.1740	+10	−63
20 Tauri	5.0	0.60	7.3	24 2.3	10 53.4	+ 8 23.5	−0.4884	0.5736	0.1733	+18	−56
21 Tauri	7.0	0.60	7.4	24 13.5	10 55.2	+ 8 25.2	−0.6707	0.5737	0.1731	+ 7	−65
22 Tauri	7.0	−0.60	+ 7.3	+24 11.9	10 58.7	+ 8 28.6	−0.6353	0.5737	+0.1730	+ 9	−63
23 Tauri	4.7	0.59	7.2	23 37.2	11 5.9	+ 8 35.5	−0.0287	0.5737	0.1727	+43	−31
24 Tauri	8.0	0.59	7.3	23 47.4	11 30.6	+ 8 59.2	−0.1318	0.5741	0.1717	+37	−36
η Tauri	3.0	0.59	7.3	23 46.7	11 33.8	+ 9 2.3	−0.1098	0.5741	0.1715	+38	−35
B. A. C. 1170	6.3	0.58	7.2	23 5.8	11 55.4	+ 9 23.1	+0.6421	0.5745	0.1707	+90	+ 3
B. A. C. 1171	7.8	−0.59	+ 7.4	+24 1.3	11 58.2	+ 9 25.8	−0.2873	0.5745	+0.1707	+29	−44
26 Tauri	7.0	0.58	7.3	23 32.0	12 9.4	+ 9 36.6	+0.2400	0.5746	0.1702	+59	−17
27 Tauri	4.0	0.58	7.3	23 43.8	12 14.4	+ 9 41.3	+0.0541	0.5748	0.1698	+48	−27
28 Tauri	6.2	0.58	7.4	23 48.8	12 14.9	+ 9 41.8	−0.0287	0.5748	0.1698	+43	−31
36 Tauri	6.0	0.51	7.8	23 48.9	18 18.6	− 8 28.6	+0.9517	0.5794	0.1543	+90	+23
p Tauri	6.0	−0.50	+ 8.6	+26 12.3	20 49.3	− 6 3.9	−1.0900	0.5812	+0.1475	−22	−64
χ Tauri	5.7	0.43	8.7	25 22.8	9 1 25.9	− 1 38.3	+0.3981	0.5846	0.1346	+70	− 6
W. iv, 1421	6.0	0.18	10.4	27 53.9	19 23.1	− 8 25.1	−0.2122	0.5944	0.0808	+32	−32
22 Aurigæ	7.0	0.09	10.9	28 50.4	10 0 29.0	− 3 32.0	−0.7949	0.5964	0.0636	− 2	−61
β Tauri	2.0	−0.08	10.8	28 31.2	1 34.6	− 2 29.1	−0.4041	0.5968	0.0601	+22	−41
B. A. C. 1772	6.3	+0.02	+11.1	+29 9.5	6 24.4	+ 2 8.5	−0.7980	0.5980	+0.0441	− 2	−61

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894:0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
136 Tauri	5.3	+0.12	+10.7	+27 35.4	**10** 11 38.3	+ 7 9.1	+0.9699	0.5989	+0.0264	+90	+36
κ Aurigæ	4.7	0.27	11.3	29 32.4	19 45.8	- 9 4.0	-0.8960	0.5992	-0.0010	- 9	-60
49 Aurigæ	5.7	0.41	10.6	28 6.5	**11** 3 8.1	- 2 0.3	+0.4514	0.5984	0.0259	+75	+ 7
53 Aurigæ	6.0	0.45	11.0	29 4.7	4 17.9	- 0 53.5	-0.5626	0.5980	0.0298	+12	-49
54 Aurigæ	6.0	0.45	10.7	28 21.6	4 44.8	- 0 27.7	+0.1499	0.5978	0.0313	+54	- 9
25 Geminorum	6.5	+0.46	+10.7	+28 17.8	5 24.9	+ 0 10.7	+0.1937	0.5978	-0.0335	+56	- 7
28 Geminorum	6.0	0.49	10.9	29 4.9	6 40.2	+ 1 22.9	-0.6454	0.5974	0.0377	+ 7	-55
W. vi, 1656	8.2	0.61	9.8	26 59.7	13 50.1	+ 8 14.8	+1.1090	0.5951	0.0614	+90	+43
47 Geminorum	6.0	0.66	9.7	27 2.0	16 40.8	+10 58.3	+0.8835	0.5937	0.0706	+90	+27
53 Geminorum	6.3	0.70	9.9	28 5.1	18 23.1	-11 23.6	-0.3052	0.5929	0.0760	+27	-37
59 Geminorum	6.9	+0.76	+ 9.6	+27 50.7	21 39.0	- 8 15.8	-0.3290	0.5916	-0.0864	+26	-39
ι Geminorum	4.0	0.77	9.6	28 0.7	22 5.9	- 7 50.0	-0.5364	0.5913	0.0879	+14	-51
b^1 Geminorum	5.3	0.80	9.6	28 20.4	23 27.9	- 6 31.3	-0.9917	0.5903	0.0921	-15	-62
b^2 Geminorum	6.3	0.80	9.6	28 8.3	23 38.9	- 6 20.8	-0.8041	0.5902	0.0926	- 2	-62
B. A. C. 2472	8.0	0.81	9.5	28 8.0	23 58.3	- 6 2.3	-0.8301	0.5902	0.0936	- 4	-62
υ Geminorum	4.3	+0.83	+ 9.1	+27 8.0	**12** 2 0.2	- 4 5.4	-0.0133	0.5889	-0.0999	+44	-23
c Geminorum	6.0	0.91	8.4	26 2.4	5 10.3	- 1 3.0	+0.7612	0.5882	0.1093	+90	+16
φ Geminorum	5.0	0.96	8.5	27 2.5	8 47.4	+ 2 25.3	-0.6686	0.5848	0.1229	+ 7	-61
ω^1 Cancri	6.0	1.00	7.7	25 41.1	11 42.8	+ 5 13.7	+0.3429	0.5826	0.1285	+66	- 8
ω^2 Cancri	6.3	1.00	7.6	25 22.9	12 2.1	+ 5 32.3	+0.6046	0.5824	0.1295	+88	+ 5
ψ^1 Cancri	6.8	+1.06	+ 7.6	+26 9.4	15 21.8	+ 8 44.0	-0.6237	0.5802	-0.1388	+10	-60
ψ^2 Cancri	6.7	1.06	7.4	25 49.8	15 27.9	+ 8 49.8	-0.3059	0.5799	0.1390	+27	-42
λ Cancri	5.7	1.11	6.5	24 21.4	19 29.6	-11 17.9	+0.6071	0.5771	0.1498	+88	+ 3
υ^1 Cancri	6.0	1.15	6.5	24 53.0	21 56.6	- 8 56.7	-0.3028	0.5750	0.1563	+28	-44
υ^2 Cancri	5.8	1.16	6.3	24 29.9	22 44.1	- 8 11.0	-0.0372	0.5744	0.1582	+42	-30
υ^3 Cancri	6.0	+1.18	+ 6.1	+24 26.4	23 54.5	- 7 3.3	-0.1642	0.5736	-0.1613	+35	-37
υ^4 Cancri	5.7	1.19	6.0	24 26.8	**13** 0 30.7	- 6 28.4	-0.2691	0.5731	0.1628	+29	-42
ξ Cancri	5.0	1.38	3.4	22 28.5	15 35.8	+ 8 2.6	-0.9924	0.5607	0.1974	-12	-68
79 Cancri	6.3	1.39	3.4	22 25.7	16 1.0	+ 8 26.8	-1.0280	0.5606	0.1985	-15	-68
B. A. C. 3138	6.3	1.39	3.0	21 43.2	17 25.0	+ 9 47.8	-0.5838	0.5591	0.2013	+13	-64
B. A. C. 3206	6.3	+1.43	+ 1.9	+20 14.7	22 13.0	- 9 34.7	-0.0747	0.5554	-0.2108	+40	-38
26 Leonis	7.7	1.53	- 1.4	15 43.6	**14** 13 1.7	+ 4 42.8	+1.2220	0.5437	0.2360	+90	+33
37 Leonis	5.7	1.60	2.8	14 15.4	21 28.5	-11 7.6	+0.6847	0.5375	0.2477	+90	- 4
42 Leonis	6.0	1.64	2.8	15 30.5	23 51.2	- 8 49.6	-1.1910	0.5357	0.2506	-24	-74
l Leonis	5.3	1.68	5.6	11 6.3	**15** 12 49.4	+ 3 43.2	-0.0154	0.5278	0.2642	+43	-42
χ Leonis	4.8	+1.70	- 7.2	+ 7 54.4	20 28.1	+11 7.3	+1.2370	0.5238	-0.2701	+90	+28
B. A. C. 3837	6.3	1.74	7.5	8 38.2	**16** 0 50.7	- 8 38.4	-0.7036	0.5218	0.2733	+ 8	-81
σ Leonis	4.1	1.74	8.3	6 36.4	4 21.3	- 5 14.4	+0.4304	0.5202	0.2748	+69	-21
β Virginis	3.7	1.78	10.6	+ 2 21.5	19 3.2	+ 9 0.4	+0.7506	0.5153	0.2797	+90	- 6
13 Virginis	6.1	1.83	12.2	- 0 12.7	**17** 9 15.2	- 1 11.6	-0.5631	0.5125	0.2799	+16	-79
η Virginis	4.0	+1.84	-12.2	- 0 4.9	9 53.2	- 0 34.8	-0.8658	0.5125	-0.2797	- 1	-90
B. A. C. 4394	6.0	1.86	14.7	8 25.2	**18** 10 37.9	- 0 36.2	+1.0490	0.5125	0.2695	+82	+12
α Virginis	1.5	1.88	15.2	10 36.7	19 3.5	+ 7 34.2	+1.1180	0.5140	0.2631	+79	+17
h Virginis	5.8	1.89	15.2	9 37.3	22 59.5	+11 23.1	-0.9572	0.5146	0.2598	- 9	-90
86 Virginis	5.9	1.90	15.4	11 53.9	**19** 5 29.5	- 6 18.8	-0.2174	0.5163	0.2534	+30	-56
B. A. C. 4700	5.6	+1.92	-15.6	-15 48.3	17 50.6	+ 5 39.5	+0.8952	0.5199	-0.2393	+74	+ 4
10 Libræ	6.5	1.96	15.3	17 55.3	**20** 13 47.6	+ 0 59.1	-1.3300	0.5271	0.2094	-49	-79
42 Libræ	5.7	1.98	13.9	23 28.6	**21** 12 32.3	- 1 0.6	+0.3577	0.5364	0.1671	+49	-25
B. A. C. 5197	6.0	1.98	13.6	24 23.2	15 5.1	+ 1 27.1	+0.9258	0.5371	0.1599	+66	+ 9
A Scorpii (2d star)	5.2	1.98	13.3	25 0.8	18 39.6	+ 4 54.5	+1.0410	0.5386	0.1543	+65	+17
B. A. C. 5253	5.8	+1.98	-13.4	-24 13.2	18 48.3	+ 5 2.8	+0.1571	0.5386	-0.1541	+37	-36
B. A. C. 5254	5.8	1.97	13.5	23 39.9	18 49.9	+ 5 4.4	-0.4490	0.5386	0.1539	+ 6	-73
B. A. C. 5255	6.0	1.99	13.3	25 5.8	18 55.9	+ 5 10.2	+1.0900	0.5386	0.1538	+65	+22
3 Scorpii	6.7	1.98	13.3	24 55.9	19 8.5	+ 5 22.3	+0.8780	0.5387	0.1533	+65	+ 6
B. A. C. 5347	6.0	1.98	12.8	26 2.7	**22** 1 16.1	+11 17.6	+1.1990	0.5408	0.1397	+64	+33
σ Scorpii	3.4	+1.96	-12.6	-25 20.5	7 12.8	- 6 57.7	-0.3618	0.5428	-0.1262	+ 8	-67

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

APRIL.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
α Scorpii	1.4	+1.96	-12.2	-26 12.0	22 10 54.1	- 3 24.0	+0.1256	0.5438	-0.1176	+31	-37
B. A. C. 5800	7.5	1.90	12.3	26 51.6	23 6 53.0	- 8 6.6	-1.0200	0.5480	0.0685	-36	-90
43 Ophiuchi	5.8	1.90	9.7	28 2.6	10 53.7	- 4 14.3	+0.0275	0.5487	0.0581	+20	-43
3 Sagittarii *var.*	4.6	1.84	8.7	27 47.5	21 35.1	+ 6 8.5	-0.7257	0.5488	0.0301	-21	-90
γ^1 Sagittarii *var.*	6.0	1.82	7.4	29 35.1	24 5 15.0	-10 31.5	+1.0950	0.5486	0.0107	+60	+26
B. A. C. 6127	5.1	+1.79	- 7.6	-28 28.2	6 37.7	- 9 11.8	-0.1423	0.5484	-0.0070	+ 7	-53
τ Sagittarii	3.6	1.57	5.1	27 49.6	25 8 52.6	- 7 51.4	-0.1624	0.5429	+0.0598	+11	-54
B. A. C. 6628	5.9	1.50	4.2	28 4.3	16 49.6	- 0 10.7	+0.6606	0.5400	0.0790	+59	- 7
B. A. C. 6666	5.8	1.47	4.2	27 12.2	19 17.6	+ 2 12.3	-0.0978	0.5391	0.0849	+17	-50
ω Sagittarii	5.1	1.34	3.2	26 34.9	26 7 16.5	-10 12.9	+0.3965	0.5343	0.1123	+46	-22
A Sagittarii	5.3	+1.33	- 3.1	-26 29.0	8 44.3	- 8 48.1	+0.4535	0.5335	+0.1155	+49	-19
B. A. C. 7077	6.4	1.14	1.9	25 18.1	27 0 49.0	+ 6 45.2	+1.2800	0.5260	0.1494	+65	+44
B. A. C. 7325	6.9	0.92	2.0	20 36.3	17 22.3	- 1 12.8	-1.1580	0.5186	0.1803	-33	-90
χ Capricorni	5.4	0.92	1.6	21 37.2	18 16.5	- 0 20.3	+0.1209	0.5181	0.1818	+39	-38
26 Capricorni	7.0	0.90	1.9	20 37.3	18 38.1	+ 0 0.7	-0.9139	0.5178	0.1824	-16	-90
27 Capricorni	6.5	+0.91	- 1.8	-20 58.9	18 46.2	+ 0 8.5	-0.4927	0.5178	+0.1826	+ 8	-76
φ Capricorni	5.5	0.88	1.6	21 5.5	21 47.5	+ 3 4.2	+0.1903	0.5166	0.1878	+43	-34
33 Capricorni	5.7	0.84	1.0	21 18.1	28 2 3.1	+ 7 11.8	+1.2370	0.5146	0.1948	+69	+33
ε Capricorni	4.7	0.73	1.1	19 56.5	8 34.8	-10 28.3	+1.0480	0.5122	0.2051	+70	+15
κ Capricorni	5.0	0.71	1.0	19 21.0	11 24.8	- 7 43.4	+0.9881	0.5112	0.2093	+71	+11
29 Aquarii (*mean.*)	6.5	+0.60	- 0.8	-17 28.5	21 34.1	+ 2 7.6	+1.1380	0.5078	+0.2236	+73	+21
39 Aquarii	6.4	0.51	1.3	14 42.9	29 2 46.3	+ 7 10.7	-0.6863	0.5063	0.2301	+ 4	-90
45 Áquarii	6.3	0.47	1.3	13 50.1	6 11.8	+10 30.1	-0.8445	0.5055	0.2344	- 5	-90
50 Aquarii	6.1	0.44	1.0	14 4.0	9 1.8	-10 44.9	+0.0782	0.5048	0.2375	+43	-40
B. A. C. 7835	6.5	0.41	0.9	13 27.5	11 56.4	- 7 55.4	+0.1136	0.5040	0.2408	+46	-38
65 Aquarii	7.0	+0.32	- 1.3	-10 39.5	18 47.2	- 1 16.5	-1.2350	0.5029	+0.2479	-30	-90
70 Aquarii	6.2	0.29	1.0	11 6.9	21 40.0	+ 1 31.3	-0.0215	0.5025	0.2509	+40	-45
Lalande 44734	6.8	0.27	1.0	10 37.5	23 53.3	+ 3 40.6	+0.0105	0.5023	0.2529	+42	-44
h^1 Aquarii	5.4	0.19	1.1	8 15.9	30 6 27.7	+10 3.7	-0.8392	0.5019	0.2586	- 1	-90
h^2 Aquarii	7.4	0.19	1.1	8 19.6	6 32.5	+10 8.3	-0.7537	0.5019	0.2586	+ 4	-90
h^3 Aquarii	7.0	+0.19	- 1.1	- 8 30.5	6 50.6	+10 25.8	-0.4804	0.5020	+0.2589	+18	-73
h^4 Aquarii	8.0	0.18	1.1	8 16.0	7 32.5	+11 6.5	-0.5588	0.5020	0.2595	+14	-79
χ Aquarii	5.3	0.14	0.7	8 18.3	12 38.3	- 7 56.5	+0.8153	0.5021	0.2632	+67	- 2
B. A. C. 8184	6.3	+0.05	- 1.1	- 5 6.6	19 20.2	- 1 26.2	-0.8141	0.5025	+0.2679	+ 2	-90

MAY.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
20 Piscium	5.5	-0.04	- 0.8	- 3 21.1	1 5 1.2	+ 7 57.9	-0.0582	0.5039	+0.2727	+41	-48
Venus				2 27.5	5 58.4	+ 8 53.5	-0.7484	0.4638	0.2599	+ 7	-90
24 Piscium	6.1	0.05	0.5	3 44.6	7 37.8	+10 30.0	+1.0690	0.5044	0.2736	+86	+13
Lalande 47041	7.1	-0.11	- 0.9	- 0 52.1	11 13.0	-10 1.2	-0.9822	0.5053	+0.2750	- 8	-90
44 Piscium	5.9	0.22	0.3	+ 1 21.1	2 0 28.0	+ 2 50.5	+0.3522	0.5099	0.2773	+64	-26
B. A. C. 221	5.9	0.32	- 0.1	4 44.1	12 4.0	- 9 54.4	+0.0398	0.5154	0.2767	+47	-42
B. A. C. 274	6.2	0.37	+ 0.2	5 54.7	17 48.6	- 4 20.4	+0.4055	0.5187	0.2752	+68	-23
70 Piscium	8.0	0.39	0.0	7 22.1	18 56.0	- 3 15.1	-0.7949	0.5193	0.2748	+ 3	-73
ε Piscium	4.2	-0.39	+ 0.1	+ 7 19.2	19 21.0	- 2 50.8	-0.6292	0.5195	+0.2747	+12	-81
ζ Piscium	4.8	0.43	0.3	7 0.9	3 0 37.8	+ 2 16.0	+1.1290	0.5226	0.2722	+90	+19
π Piscium	5.7	0.51	1.1	11 36.0	11 49.1	-10 54.2	-0.5775	0.5311	·0.2651	+15	-74
B. A. C. 490	7.5	0.51	1.1	11 32.2	12 5.5	-10 38.2	-0.4407	0.5311	0.2650	+22	-66
				NEW	*MOON.*						
χ Tauri	5.7	-0.54	+ 7.5	+25 22.8	6 9 20.4	+ 8 3.9	+0.3297	0.5936	+0.1357	+65	- 9
W. iv, 1421	6.0	0.38	9.2	27 53.9	7 2 47.3	+ 0 46.8	-0.2859	0.6040	0.0806	+28	-36
22 Aurigæ	7.0	0.32	9.5	28 50.5	7 44.5	+ 5 31.2	-0.8690	0.6060	0.0636	- 7	-61
β Tauri	2.0	0.30	9.6	28 31.2	8 48.2	+ 6 32.1	-0.4801	0.6066	0.0568	+17	-46
B. A. C. 1772	6.3	0.24	10.0	29 9.5	13 30.0	+11 1.7	-0.8740	0.6078	0.0439	- 7	-61
136 Tauri	5.3	-0.16	+ 9.8	+27 35.4	18 34.8	- 8 6.7	+0.8690	0.6082	+0.0261	+90	+30

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° '	d h m	h m				°	°
κ Aurigæ	4.7	−0.05	+10.4	+29 32.4	**8** 2 29.4	− 0 32.8	−0.9795	0.6082	−0.0017	−15	−60
49 Aurigæ	5.7	+0.07	10.0	28 6.5	9 40.2	+ 6 19.3	+0.3461	0.6067	0.0270	+66	+ 2
53 Aurigæ	6.0	0.10	10.4	29 4.7	10 49.3	+ 7 24.4	−0.6557	0.6066	0.0303	+ 7	−56
54 Aurigæ	6.0	0.10	10.2	28 21.6	11 14.5	+ 7 49.4	+0.0483	0.6064	0.0324	+47	−14
25 Geminorum	6.5	0.11	10.2	28 17.8	11 53.6	+ 8 26.9	+0.0882	0.6063	0.0346	+50	−12
28 Geminorum	6.0	+0.13	+10.4	+29 4.9	13 7.0	+ 9 37.2	−0.7387	0.6057	−0.0389	+ 2	−61
W. vi, 1656	8.2	0.24	9.6	26 59.7	20 6.8	− 7 41.1	+0.9900	0.6027	0.0628	+90	+35
47 Geminorum	6.0	0.29	9.5	27 2.0	22 53.6	− 5 1.4	+0.7656	0.6015	0.0720	+90	+20
53 Geminorum	6.3	0.32	9.6	28 5.1	**9** 0 33.6	− 3 25.6	−0.4120	0.6005	0.0776	+21	−43
59 Geminorum	6.9	0.37	9.7	27 50.7	3 45.4	− 0 22.0	−0.4357	0.5984	0.0880	+20	−45
ι Geminorum	4.0	+0.38	+ 9.6	+28 0.7	4 11.7	+ 0 3.3	−0.6427	0.5982	−0.0893	+ 8	−58
b^1 Geminorum	5.3	0.40	9.6	28 20.4	5 32.0	+ 1 20.2	−1.0950	0.5971	0.0935	−25	−62
b^2 Geminorum	6.3	0.41	9.6	28 8.2	5 42.8	+ 1 30.5	−0.9086	0.5971	0.0942	− 9	−62
B. A. C. 2472	8.0	0.41	9.5	28 7.9	6 1.8	+ 1 48.7	−0.9319	0.5969	0.0945	−11	−62
υ Geminorum	4.3	0.44	9.2	27 7.9	8 1.2	+ 3 43.1	−0.1270	0.5957	0.1014	+37	−29
c Geminorum	6.0	+0.49	+ 8.7	+26 2.3	11 7.8	+ 6 42.0	+0.6404	0.5934	−0.1110	+90	+ 9
φ Geminorum	5.0	0.56	8.8	27 2.5	14 40.9	+10 6.3	−0.7816	0.5905	0.1217	0	−63
ω^1 Cancri	6.0	0.60	8.2	25 41.1	17 33.4	−11 8.2	+0.2211	0.5879	0.1299	+57	−14
ω^2 Cancri	6.3	0.60	8.1	25 22.9	17 52.2	−10 50.2	+0.4841	0.5878	0.1310	+76	− 1
ψ^1 Cancri	6.8	0.66	8.1	26 9.4	21 8.8	− 7 41.5	−0.7394	0.5852	0.1402	+ 3	−63
ψ^2 Cancri	5.7	+0.66	+ 7.9	+25 49.8	21 14.8	− 7 35.8	−0.4242	0.5849	−0.1405	+21	−49
λ Cancri	5.7	0.71	7.2	24 21.4	**10** 1 13.0	− 3 47.1	+0.4800	0.5816	0.1512	+76	− 3
υ^1 Cancri	6.0	0.75	7.2	24 53.0	3 37.9	− 1 28.0	−0.4234	0.5790	0.1576	+21	−51
υ^2 Cancri	5.8	0.76	7.0	24 29.9	4 24.9	− 0 42.8	−0.1596	0.5785	0.1596	+35	−37
υ^3 Cancri	6.0	0.78	6.9	24 26.4	5 34.4	+ 0 24.0	−0.2874	0.5773	0.1625	+29	−44
υ^4 Cancri	5.7	+0.79	+ 6.8	+24 26.8	6 10.1	+ 0 58.3	−0.3916	0.5769	−0.1641	+23	−49
ξ Cancri	5.0	1.00	4.7	22 28.5	21 6.6	− 8 39.3	−1.1170	0.5628	0.1984	−22	−68
79 Cancri	6.3	1.00	4.7	22 25.7	21 31.6	− 8 15.3	−1.1520	0.5622	0.1992	−25	−68
B. A. C. 3138	6.3	1.02	5.4	21 43.3	22 55.2	− 6 54.7	−0.7166	0.5610	0.2019	+ 5	−68
B. A. C. 3206	6.3	1.06	6.0	20 14.8	**11** 3 41.7	− 2 18.6	−0.2065	0.5564	0.2112	+33	−45
26 Leonis	7.7	+1.21	+ 0.2	+15 43.6	18 28.9	+11 57.4	+1.0910	0.5430	−0.2355	+90	+23
37 Leonis	5.7	1.28	− 1.1	14 15.4	**12** 2 56.8	− 3 51.9	+0.5550	0.5359	0.2466	+79	−11
42 Leonis	6.0	1.33	1.1	15 30.6	5 20.2	− 1 33.2	−1.3230	0.5342	0.2494	−39	−74
l Leonis	5.3	1.42	3.9	11 6.3	18 13.4	+11 4.5	−0.1409	0.5249	0.2622	+37	−49
χ Leonis	4.8	1.46	5.8	7 54.4	**13** 2 6.5	− 5 27.0	+1.1190	0.5204	0.2677	+90	+19
B. A. C. 3837	6.3	+1.51	− 5.9	+ 8 38.2	6 32.0	− 1 9.6	−0.8271	0.5181	−0.2703	+ 1	−81
σ Leonis	4.1	1.52	6.9	6 36.5	10 5.2	+ 2 17.0	+0.3113	0.5163	0.2720	+62	−27
β Virginis	3.7	1.63	9.7	+ 2 21.5	**14** 0 58.7	− 7 16.6	+0.6488	0.5106	0.2762	+86	−11
13 Virginis	6.1	1.72	11.3	− 0 12.1	15 23.9	+ 6 42.9	−0.6612	0.5077	0.2762	+11	−87
η Virginis	4.0	1.73	11.3	0 4.9	16 2.6	+ 7 20.4	−0.9640	0.5077	0.2762	− 6	−90
B. A. C. 4394	6.0	+1.87	−14.8	− 8 25.2	**15** 17 11.4	+ 7 44.8	+0.9928	0.5082	−0.2659	+82	+ 8
a Virginis	1.5	1.92	15.6	10 36.3	**16** 1 45.0	− 7 56.7	+1.0740	0.5095	0.2596	+79	+15
h Virginis	5.8	1.96	15.5	9 37.3	5 44.5	− 4 4.4	−1.0100	0.5106	0.2563	−12	−90
86 Virginis	5.9	2.01	16.0	11 53.9	12 20.2	+ 2 19.5	−0.2563	0.5123	0.2501	+28	−58
B. A. C. 4700	5.6	2.09	16.4	15 48.3	**17** 0 51.2	− 9 32.3	+0.8792	0.5165	0.2361	+74	+ 3
10 Libræ	6.5	+2.23	−16.7	−17 55.3	21 1.3	+10 0.3	−1.3240	0.5252	−0.2071	−49	−79
42 Libræ	5.7	2.40	15.6	23 28.6	**18** 19 55.9	+ 8 10.7	+0.4006	0.5356	0.1655	+51	−22
B. A. C. 5197	6.0	2.42	15.4	24 23.2	22 29.4	+10 39.1	+0.9761	0.5368	0.1604	+66	+12
A Scorpii (2d star)	5.2	2.44	15.2	25 0.8	**19** 2 4.8	− 9 52.7	+1.0970	0.5381	0.1528	+65	+22
B. A. C. 5253	5.8	2.44	15.2	24 13.2	2 13.6	− 9 44.2	+0.2088	0.5383	0.1526	+39	−33
B. A. C. 5254	5.8	+2.43	−15.2	−23 39.9	2 15.2	− 9 42.6	−0.3996	0.5383	−0.1526	+ 8	−69
B. A. C. 5255	6.0	2.45	15.1	25 5.8	2 21.2	− 9 36.8	+1.1530	0.5386	0.1523	+65	+27
3 Scorpii	6.7	2.45	15.1	24 55.9	2 33.9	− 9 24.6	+0.9349	0.5387	0.1517	+65	+10
σ Scorpii	3.4	2.48	14.0	25 20.5	14 40.5	+ 2 17.6	−0.2952	0.5434	0.1248	+11	−63
α Scorpii	1.4	2.52	13.6	26 12.0	18 22.3	+ 5 51.8	+0.1990	0.5444	0.1164	+35	−33
22 Scorpii	5.5	+2.50	−13.7	−24 53.1	18 45.6	+ 6 14.3	−1.2850	0.5448	−0.1153	−57	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

MAY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 5800	7.5	+2.57	-11.3	-26 51.6	20 14 21.9	+ 1 10.1	-0.9226	0.5495	-0.0673	-29	-90
43 Ophiuchi	5.8	2.60	10.6	28 2.6	18 22.5	+ 5 2.2	+0.1322	0.5501	0.0571	+26	-37
3 Sagittarii *var.*	5.0	2.59	9.1	27 47.6	21 5 3.5	- 8 39.3	-0.6071	0.5505	0.0294	-14	-89
γ¹ Sagittarii *var.*	6.0	2.54	7.7	29 35.1	12 43.0	- 1 15.8	+1.2230	0.5504	0.0096	+60	+42
B. A. C. 6127	5.1	2.58	6.7	28 28.2	14 5.6	+ 0 4.8	-0.0203	0.5503	-0.0059	+13	-46
τ Sagittarii	3.6	+2.45	- 3.9	-27 49.6	22 16 19.6	+ 1 23.2	-0.0055	0.5442	+0.0608	+19	-45
B. A. C. 6628	5.9	2.42	2.6	28 4.2	23 0 17.0	+ 9 4.3	+0.8264	0.5413	0.0800	+62	+ 4
B. A. C. 6666	5.8	2.38	2.5	27 12.1	2 45.3	+11 27.7	+0.0684	0.5400	0.0860	+25	-40
ω Sagittarii	5.1	2.27	0.8	26 34.8	14 45.9	- 0 55.8	+0.5768	0.5346	0.1133	+57	-12
A Sagittarii	5.3	2.26	- 0.6	26 28.9	16 14.0	+ 0 29.4	+0.6356	0.5337	0.1164	+60	- 8
B. A. C. 7325	6.9	+1.84	+ 2.0	-20 36.3	25 1 4.8	+ 8 17.4	-0.9519	0.5166	+0.1801	-18	-90
χ Capricorni	5.4	1.85	2.5	21 37.2	1 59.5	+ 9 10.4	+0.3313	0.5163	0.1815	+50	-26
26 Capricorni	7.0	1.82	2.2	20 37.3	2 21.2	+ 9 31.5	-0.7052	0.5160	0.1823	- 3	-90
27 Capricorni	6.5	1.83	2.3	20 58.9	2 29.4	+ 9 39.4	-0.2834	0.5160	0.1824	+18	-61
φ Capricorni	5.5	1.82	3.0	21 5.5	5 32.7	-11 22.9	+0.4029	0.5142	0.1875	+54	-23
ε Capricorni	4.7	+1.66	+ 3.8	-19 56.4	16 27.7	- 0 47.6	+1.2700	0.5093	+0.2042	+70	+36
κ Capricorni	5.0	1.62	3.7	19 20.9	19 19.8	+ 1 59.4	+1.2130	0.5079	0.2082	+71	+29
δ Capricorni	2.8	1.55	3.1	16 36.4	21 37.2	+ 4 12.6	-1.3240	0.5074	0.2113	-47	-80
29 Aquarii (*mean.*)	6.5	1.49	4.2	17 28.4	26 5 37.9	+11 59.2	-1.3630	0.5039	0.2220	+73	+48
39 Aquarii	6.4	1.39	3.8	14 42.8	10 55.0	- 6 52.9	-0.4686	0.5021	0.2283	+15	-73
45 Aquarii	6.3	+1.34	+ 3.8	-13 50.0	14 23.9	- 3 30.0	-0.6301	0.5010	+0.2324	+ 7	-86
50 Aquarii	6.1	1.32	4.2	14 3.9	17 16.7	- 0 42.3	+0.2965	0.5002	0.2354	+55	-29
B. A. C. 7835	6.5	1.28	4.2	13 27.4	20 14.5	+ 2 10.4	+0.3362	0.4996	0.2385	+58	-27
65 Aquarii	7.0	1.18	3.8	10 39.4	27 3 12.8	+ 8 56.9	-1.0230	0.4974	0.2450	-14	-90
70 Aquarii	6.2	1.13	4.2	11 6.8	6 8.8	+11 47.9	+0.1972	0.4974	0.2478	+52	-34
Lalande 44734	6.8	+1.10	+ 4.2	-10 37.2	8 24.5	-10 0.3	+0.2241	0.4972	+0.2501	+54	-33
h¹ Aquarii	5.4	1.01	4.0	8 15.8	15 6.5	- 3 29.6	-0.6323	0.4968	0.2554	+10	-85
Mars				8 51.3	15 9.5	- 3 26.7	+0.0162	0.4690	0.2451	+44	-44
h² Aquarii	7.4	1.01	4.0	8 19.5	15 11.8	- 3 24.5	-0.5441	0.4968	0.2554	+15	-78
h³ Aquarii	7.0	1.01	4.1	8 30.4	15 29.9	- 3 7.0	-0.2701	0.4968	0.2557	+29	-59
h⁴ Aquarii	8.0	+1.00	+ 4.1	- 8 15.9	16 12.6	- 2 25.4	-0.3492	0.4968	+0.2562	+25	-64
χ Aquarii	5.3	0.94	4.6	8 18.2	21 24.5	+ 2 37.6	+1.0350	0.4964	0.2595	+82	+12
B. A. C. 8184	6.3	0.84	4.0	5 6.5	28 4 14.2	+ 9 15.7	-0.6134	0.4968	0.2639	+12	-83
20 Piscium	5.5	0.73	4.3	3 21.0	14 7.2	- 5 8.1	+0.1405	0.4982	0.2686	+52	-37
24 Piscium	6.1	0.70	4.6	3 44.5	16 47.0	- 2 32.8	+1.2740	0.4986	0.2698	+86	+29
Lalande 47041	7.1	+0.65	+ 3.9	- 0 52.0	20 26.5	+ 1 0.4	-0.7989	0.4996	+0.2712	+ 3	-90
44 Piscium	5.9	0.50	4.4	+ 1 21.2	29 9 56.7	- 9 52.9	+0.5322	0.5043	0.2733	+76	-17
B. A. C. 221	5.9	0.36	4.3	4 44.2	21 44.9	+ 1 34.5	+0.2004	0.5104	0.2727	+55	-33
B. A. C. 274	6.2	0.30	4.3	5 54.8	30 3 35.1	+ 7 14.2	+0.5591	0.5140	0.2712	+78	+ 1
70 Piscium	8.0	0.28	4.0	7 22.2	4 43.6	+ 8 20.6	-0.6489	0.5148	0.2709	+11	-81
ε Piscium	4.2	+0.28	+ 4.0	+ 7 19.3	5 8.8	+ 8 45.0	-0.4856	0.5148	+0.2708	+20	-71
ζ Piscium	4.8	0.21	3.9	7 1.0	10 30.1	-10 3.6	+1.2740	0.5190	0.2686	+90	+32
100 Piscium	6.8	0.11	3.9	12 1.0	20 45.3	- 0 7.7	-1.1700	0.5266	0.2605	-22	-78
π Piscium	5.7	0.10	4.1	11 36.1	21 49.9	+ 0 54.8	-0.4597	0.5276	0.2617	+21	-67
B. A. C. 490	7.5	+0.10	4.1	11 32.3	22 6.1	+ 1 10.5	-0.3241	0.5278	0.2615	+27	-59
19 Arietis	5.7	-0.04	+ 4.7	+14 47.1	31 14 29.5	- 6 58.7	+0.5159	0.5433	+0.2454	+76	-13
27 Arietis	6.3	0.10	4.8	17 14.2	22 44.1	+ 0 39.5	-0.0726	0.5511	0.2344	+40	-40
B. A. C. 782	7.0	-0.12	+ 4.7	+18 24.8	23 33.8	+ 1 46.7	-0.9922	0.5524	+0.2330	-11	-72
JUNE.											
36 Arietis	6.5	-0.14	+ 5.3	+17 19.0	1 4 12.6	+ 6 15.6	+1.1810	0.5575	+0.2257	+90	+32
40 Arietis	6.3	0.15	5.4	17 50.6	6 0.2	+ 7 59.3	+1.0520	0.5594	0.2228	+90	+22
47 Arietis	6.0	0.19	5.3	20 14.7	10 0.0	+11 50.3	-0.4915	0.5636	0.2156	+18	-61
ζ Arietis	4.7	0.21	5.8	20 39.2	16 57.2	- 5 28.1	+0.5499	0.5715	0.2018	+81	- 5
τ¹ Arietis	5.0	0.22	6.0	20 46.0	19 31.2	- 3 0.0	+0.9464	0.5744	0.1963	+90	+18
B. A. C. 1055	6.8	-0.23	+ 6.0	+21 40.1	20 51.2	- 1 43.1	+0.3036	0.5758	+0.1933	+62	-16

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
66 Arietis	6.0	-0.24	+ 6.0	+22 26.4	1 22 23.6	- 0 14.2	-0.1750	0.5773	+0.1899	+35	-40
9 Tauri	7.0	0.24	6.3	22 51.7	2 1 46.5	+ 3 0.7	+0.0333	0.5809	0.1821	+46	-28
g Pleiadum	6 3	0.26	6.4	23 57.4	4 49.9	+ 5 56.8	-0.5136	0.5843	0.1744	+16	-57
17 Tauri	4.3	0.25	6.4	23 46.9	4 51.8	+ 5 58.6	-0.3341	0.5843	0.1744	+26	-47
19 Tauri	5.0	0.26	6.4	24 8.1	4 59.2	+ 6 5.7	-0.6648	0.5845	0.1742	+ 8	-65
20 Tauri	5.0	-0.26	+ 6.4	+24 2.3	5 13.8	+ 6 19.8	-0.5267	0.5845	+0.1735	+16	-57
21 Tauri	7.0	0.26	6.4	24 13.5	5 15.4	+ 6 21.3	-0.7079	0.5845	0.1735	+ 5	-66
22 Tauri	7.0	0.26	6.4	24 11.9	5 18.8	+ 6 24.6	-0.6713	0.5845	+0.1734	+ 7	-65
				NEW	*MOON.*						
κ Aurigæ	4.7	-0.05	+ 9.2	+29 32.3	4 11 28.0	+10 13.8	-1.0760	0.6173	-0.0036	-23	-60
49 Aurigæ	5.7	+0.02	9.1	28 6.5	18 26.9	- 7 6.1	+0.2249	0.6165	0.0290	+58	- 5
53 Aurigæ	6.0	0.04	9.3	29 4.7	19 33.1	- 6 2.9	-0.7632	0.6162	0.0331	0	-61
54 Aurigæ	6.0	0.04	9.2	28 21.6	19 58.6	- 5 38.5	-0.0690	0.6162	0.0346	+40	-20
25 Geminorum	6.5	0.05	9.2	28 17.8	20 36.6	- 5 2.2	-0.0295	0.6162	0.0369	+43	-18
28 Geminorum	6.0	+0.06	+ 9.3	+29 4.9	21 47.8	- 3 54.1	-0.8504	0.6156	-0.0412	- 6	-61
47 Geminorum	6.0	0.17	8.8	27 1.9	5 7 17.3	+ 5 10.0	+0.6179	0.6116	0.0749	+90	+12
53 Geminorum	6.3	0.19	8.9	28 5.0	8 54.3	+ 6 42.9	-0.5442	0.6106	0.0804	+14	-51
59 Geminorum	6.9	0.22	8.8	27 50.6	12 0.3	+ 9 40.7	-0.5740	0.6087	0.0909	+12	-54
ι Geminorum	4.0	0.23	8.8	28 0.6	12 25.8	+10 5.1	-0.7778	0.6082	0.0924	- 1	-62
b^1 Geminorum	5.3	+0.24	+ 8.9	+28 20.3	13 43.8	+11 19.8	-1.2240	0.6073	-0.0967	-40	-62
b^2 Geminorum	6.3	0.25	8.8	28 8.2	13 54.3	+11 29.8	-1.0410	0.6073	0.0972	-20	-62
B. A C. 2472	8.0	0.25	8.8	28 7.9	14 12.7	+11 47.3	-1.0680	0.6071	0.0982	-22	-62
υ Geminorum	4.3	0.27	8.6	27 7.9	16 8.5	-10 21.8	-0.2765	0.6057	0.1047	+29	-37
c Geminorum	6.0	0.32	8.3	26 2.3	19 9.4	- 7 28.8	+0.4743	0.6033	0.1143	+76	0
φ Geminorum	5.0	+0.37	+ 8.3	+27 2.5	22 36.0	- 4 10.9	-0.9315	0.6003	-0.1251	-11	-63
ω^1 Cancri	6.0	0.37	7.9	25 41.1	6 1 23.3	- 1 30.6	+0.0495	0.5982	0.1337	+47	-23
ω^2 Cancri	6.3	0.40	7.8	25 22.9	1 41.6	- 1 13.0	+0.3101	0.5977	0.1345	+63	-10
ψ^1 Cancri	6.8	0.45	7.8	26 9.4	4 52.2	+ 1 49.6	-0.9016	0.5951	0.1438	- 8	-64
ψ^2 Cancri	6.7	0.44	7.7	25 49.8	4 58.0	+ 1 55.1	-0.5912	0.5948	0.1442	+11	-59
λ Cancri	5.7	+0.49	+ 7.4	+24 21.4	8 49.2	+ 5 36.8	+0.2926	0.5912	-0.1551	+62	-13
υ^1 Cancri	6.0	0.51	7.1	24 53.0	11 9.8	+ 7 51.7	-0.6006	0.5888	0.1618	+11	-61
υ^2 Cancri	5.8	0.53	7.0	24 29.9	11 55.2	+ 8 35.3	-0.3410	0.5880	0.1635	+26	-46
υ^3 Cancri	6.0	0.54	6.9	24 26.4	13 2.7	+ 9 40.0	-0.4686	0.5869	0.1664	+19	-54
υ^4 Cancri	5.7	0.55	6.9	24 26.8	13 37.4	+10 13.3	-0.5714	0.5862	0.1679	+13	-60
ξ Cancri	5.0	+0.72	+ 5.2	+22 28.5	7 4 8.3	+ 0 10.0	-1.3070	0.5711	-0.2022	-44	-68
79 Cancri	6.3	0.73	5.2	22 25.7	4 32.7	+ 0 33.4	-1.3430	0.5709	0.2031	-54	-68
B. A. C. 3138	6.3	0.74	4.9	21 43.3	5 53.9	+ 1 51.6	-0.9101	0.5694	0.2059	- 7	-68
B. A. C. 3206	6.3	0.79	4.0	20 14.8	10 32.8	+ 6 20.0	-0.4176	0.5641	0.2149	+22	-56
26 Leonis	7.7	0.92	1.4	15 43.6	8 0 58.1	- 3 45.8	+0.8494	0.5496	0.2389	+90	+ 7
34 Leonis	6.3	+0.97	+ 0.2	+13 52.7	6 58.4	+ 2 1.9	+0.3142	0.5439	-0.2468	+90	+36
37 Leonis	5.7	1.00	+ 0.1	14 15.4	9 15.0	+ 4 13.8	+1.2620	0.5417	0.2497	+62	-24
l Leonis	5.3	1.17	- 2.4	11 6.4	9 0 24.5	- 5 6.9	-0.3746	0.5289	0.2648	+25	-62
χ Leonis	4.8	1.19	3.4	7 54.4	8 0.8	+ 2 14.8	+0.8610	0.5223	0.2685	+90	+ 2
B. A. C. 3837	6.3	1.25	4.3	8 38.2	12 22.8	+ 6 28.5	-1.0660	0.5210	0.2715	-14	-81
σ Leonis	4.1	+1.27	- 5.3	+ 6 36.5	15 53.4	+ 9 52.5	+0.0653	0.5189	-0.2730	+48	-40
β Virginis	3.7	1.38	8.1	+ 2 21.6	10 6 38.9	+ 0 10.9	+0.4033	0.5118	0.2764	+67	-24
13 Virginis	6.1	1.51	9.8	- 0 12.1	21 0.2	- 9 49.5	-0.8876	0.5075	0.2751	- 2	-90
η Virginis	4.0	1.52	9.8	0 4.9	21 38.7	- 9 12.1	-1.1980	0.5074	0.2750	-23	-90
B. A. C. 4394	6.0	1.71	14.0	8 25.2	11 22 48.6	- 8 47.7	+0.7916	0.5062	0.2634	+73	- 3
58 Virginis	7.0	+1.76	-14.7	- 9 59.5	12 3 25.1	- 4 22.2	+1.2540	0.5066	-0.2600	+80	+29
α Virginis	1.5	1.81	14.9	10 36.7	7 24.4	- 0 30.0	+0.8853	0.5072	0.2569	+79	+ 2
h Virginis	5.8	1.85	14.6	9 37.4	11 25.3	+ 3 23.8	-1.1930	0.5082	0.2535	-26	-90
86 Virginis	5.9	1.92	15.4	11 54.0	18 3.4	+ 9 50.1	-0.4262	0.5098	0.2471	+19	-69
B. A. C. 4700	5.6	2.06	16.6	15 48.4	13 6 40.0	- 1 56.0	+0.7347	0.5136	0.2340	+74	- 5
42 Libræ	5.7	+2.57	-16.6	-23 28.7	15 2 6.7	- 7 51.1	+0.3439	0.5330	-0.1627	+48	-25

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
B. A. C. 5197	6.0	+2.61	-16.6	-24 23.3	15 4 41.5	- 5 21.3	+0.9249	0.5339	-0.1575	+66	+ 9
A Scorpii (2d star)	5.2	2.65	16.4	25 0.9	8 18.6	- 1 51.3	+1.0540	0.5360	0.1501	+65	-19
B. A. C. 5253	5.8	2.64	16.2	24 13.3	8 27.4	- 1 42.9	+0.1641	0.5362	0.1497	+37	-36
B. A. C. 5254	5.8	2.64	16.2	23 40.0	8 29.0	- 1 41.3	-0.4467	0.5362	0.1497	+ 6	-73
B. A. C. 5255	6.0	2.65	16.4	25 5.9	8 35.1	- 1 35.4	+1.1050	0.5362	0.1495	+65	+23
3 Scorpii	6.7	+2.66	-16.3	-24 56.0	8 47.8	- 1 23.2	+0.8917	0.5363	-0.1489	+65	+ 7
B. A. C. 5347	6.0	2.74	15.9	26 2.8	14 59.6	+ 4 36.3	+1.2290	0.5391	0.1357	+64	+38
σ Scorpii	3.4	2.78	15.2	25 20.5	20 59.8	+10 24.4	-0.3184	0.5414	0.1224	+10	-64
α Scorpii	1.4	2.83	14.8	26 12.0	16 0 43.1	- 9 59.9	+0.1831	0.5428	0.1140	+34	-34
B. A. C. 5800	7.5	3.01	12.2	26 51.6	20 49 5	+ 9 25.1	-0.8976	0.5489	0.0655	-28	-90
43 Ophiuchi	5.8	+3.06	-11.7	-28 2.6	17 0 51.1	-10 41.8	+0.1675	0.5493	-0.0549	+28	-35
3 Sagittarii *var.*	5.0	3.11	9.7	27 47.6	11 34.5	- 0 20.8	-0.5500	0.5505	0.0275	-12	-83
B. A. C. 6127	5.1	3.16	8.3	28 28.2	20 38.3	+ 8 24.0	+0.0554	0.5527	-0.0039	+17	-41
ϕ Sagittarii	3.7	3.16	5.2	27 6.1	18 13 22.1	+ 0 33.2	-1.1680	0.5479	+0.0389	-49	-90
τ Sagittarii	3.6	3.17	3.4	27 49.6	22 55.2	+ 9 46.4	+0.1240	0.5450	0.0628	+26	-37
B. A. C. 6628	5.9	+3.16	- 1.9	-28 4.2	19 6 53.1	- 6 32.1	+0.9705	0.5421	+0.0821	+62	+14
B. A. C. 6666	5.8	3.15	- 1.6	27 12.1	9 21.6	- 4 8.6	+0.2185	0.5412	0.0878	+34	-32
ω Sagittarii	5.1	3.07	+ 0.7	26 34.8	21 23.3	+ 7 29.1	+0.7484	0.5355	0.1152	+63	0
A Sagittarii	5.3	3.06	0.9	26 28.9	22 51.5	+ 8 54.4	+0.8114	0.5348	0.1184	+64	+ 4
17 Capricorni	6.0	2.80	4.1	21 53.9	20 21 35.8	+ 6 54.9	-1.0580	0.5224	0.1637	-28	-90
η Capricorni	5.1	+2.70	+ 5.1	-20 16.3	21 6 39.2	- 8 18.6	-1.2990	0.5174	+0.1797	-49	-90
B. A. C. 7325	6.9	2.70	5.4	20 36.2	7 48.3	- 7 11.6	-0.7300	0.5166	0.1814	- 5	-90
χ Capricorni	5.4	2.72	5.7	21 37.1	8 43.2	- 6 18.4	+0.5633	0.5159	0.1829	+63	-14
26 Capricorni	5.4	2.69	5.5	20 37.2	9 5.2	- 5 57.0	-0 4766	0.5159	0.1834	+ 9	-74
27 Capricorni	6.5	2.70	6.0	20 58.8	9 13.4	- 5 49.1	-0.0554	0.5158	0.1839	+30	-47
φ Capricorni	5.5	+2.70	+ 6.4	-21 5.4	12 17.6	- 2 50.5	+0.6407	0.5140	+0.1887	+67	-10
ι Aquarii	4.4	2.32	8.3	14 22.9	14 43.3	- 1 11.5	-1.2810	0.5018	0.2248	-38	-88
42 Aquarii	5.8	2.24	8.4	13 21.7	20 15.1	+ 4 10.8	-1.1460	0.4994	0.2310	-25	-90
45 Aquarii	6.3	2.24	8.7	13 50.0	21 25.5	+ 5 19.2	-0.3537	0.4989	0.2321	+22	-65
50 Aquarii	6.1	2.21	9.1	14 3.9	23 0 20.5	+ 8 9.2	+0.5860	0.4979	0.2352	+72	-14
B. A. C. 7835	6.5	+2.17	+ 9.3	-13 27.3	3 20.4	+11 3.9	+0.6237	0.4972	+0.2382	+75	-12
65 Aquarii	7.0	2.06	9.2	10 39.3	10 24.5	- 6 3.8	-0.7391	0.4956	0.2445	+ 2	-90
70 Aquarii	6.2	2.03	9.7	11 6.7	13 23.0	- 3 10.8	+0.4922	0.4944	0.2470	+69	-19
Lalande 44734	6.8	2.00	9.7	10 37.1	15 41.0	- 0 56.2	+0.5208	0.4941	0.2488	+72	-17
h^1 Aquarii	5.4	1.91	9.7	8 15.7	22 29.5	+ 5 41.0	-0.3379	0.4930	0.2540	+26	-63
h^2 Aquarii	7.4	+1.91	+ 9.7	- 8 19.4	22 34.6	+ 5 45.9	-0.2489	0.4928	+0.2540	+30	-58
h^3 Aquarii	7.0	1 91	9.8	8 30.3	22 53.3	+ 6 4.1	+0.0272	0.4928	0.2541	+44	-43
h^4 Aquarii	8.0	1.90	9.8	8 15.8	23 36.7	+ 6 46.3	-0.0508	0.4928	0.2546	+40	-47
χ Aquarii	5.3	1.84	10.3	8 18.1	24 4 54.2	+11 54.9	+1.3440	0.4922	0.2579	+82	+38
B. A. C. 8184	6.3	1.74	9.9	5 6.4	11 51.8	- 5 19.1	-0.3159	0.4920	0.2616	+27	-62
20 Piscium	5.5	+1.61	+10.0	- 3 20.9	21 57.0	+ 4 29.4	+0.4438	0.4928	+0.2658	+70	-22
Lalande 47041	7.1	1.52	9.7	- 0 51.9	25 4 24.7	+10 46.3	-0.5049	0.4938	0.2675	+19	-74
44 Piscium	5.9	1.37	10.1	+ 1 21.3	18 14.0	+ 0 12.3	+0.8316	0.4980	0.2693	+90	- 1
60 Piscium	6.2	1.21	9.0	6 9.9	26 5 51.2	+11 29.5	-1.1530	0.5031	0.2681	-20	-84
B. A. C. 221	5.9	1.22	9.5	4 44.3	6 19.8	+11 57.2	+0.4851	0.5035	0.2681	+73	-19
B. A. C. 274	6.2	+1.15	+ 9.5	+ 5 54.9	12 19.0	- 6 14.1	+0.8401	0.5065	+0.2665	+90	0
70 Piscium	8.0	1.13	9.1	7 22.3	13 29.1	- 5 6.1	-0.3844	0.5075	0.2661	+25	-64
ε Piscium	4.2	1.13	9.1	7 19.4	13 55.1	- 4 40.8	-0.2195	0.5076	0.2660	+33	-55
100 Piscium	6.8	0.94	8.5	12 1.1	27 5 55.6	+10 50.6	-0.9361	0.5193	0.2575	- 6	-78
π Piscium	5.7	0.92	8.7	11 36.1	7 2.0	+11 54.9	-0.2152	0.5204	0.2566	+33	-52
490 Piscium	7.5	+0.92	+ 8.7	+11 32.3	7 18.5	-11 49.1	-0.0781	0.5204	+0.2564	+40	-45
19 Arietis	5.7	0.75	8.6	14 47.1	28 0 5.8	+ 4 25.6	+0.7394	0.5359	0.2405	+90	0
27 Arietis	6.3	0.68	8.3	17 14.2	8 11.2	-11 45.4	+0.1247	0.5443	0.2302	+51	-30
B. A. C. 782	7.0	0.65	8.0	18 24.8	9 22.5	-10 36.6	-0.8063	0.5456	0.2284	+ 1	-72
μ Arietis	6.0	0.63	7.8	19 33.7	13 14.0	- 6 53.1	-1.1090	0.5498	0.2226	-20	-70
40 Arietis	6.3	+0.61	+ 8.5	+17 50.6	15 56.9	- 4 16.0	+1.2430	0.5527	+0.2183	+90	+39

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JUNE.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
47 Arietis	6.0	+0.57	+ 8.0	+20 14.7	28 20 1.0	- 0 20.6	-0.3284	0.5576	+0.2113	+27	-51
B. A. C. 920	7.0	0.57	7.7	21 11.8	20 21.3	- 0 1.1	-1.2240	0.5580	0.2105	-32	-69
ε Arietis	4.3	0.57	7.8	20 55.1	20 30.1	+ 0 7.4	-0.9086	0.5581	0.2103	- 6	-69
ζ Arietis	4.7	0.52	8.2	20 39.2	29 3 6.2	+ 6 29.0	+0.7076	0.5656	0.1976	+90	+ 4
τ^1 Arietis	5.0	0.50	8.2	20 46.0	5 42.7	+ 8 59.6	+1.1020	0.5685	0.1923	+90	+30
B. A. C. 1055	6.8	+0.49	+ 8.0	+21 40.1	7 4.1	+10 18.0	+0.4488	0.5702	+0.1894	+72	- 9
66 Arietis	6.0	0.47	7.9	22 26.4	8 38.1	+11 48.4	-0.0336	0.5744	0.1861	+42	-33
7 Tauri	6.0	0.45	7.6	24 6.6	11 1.9	- 9 53.4	-1.2760	0.5750	0.1806	-42	-66
9 Tauri	7.0	0.45	7.9	22 51.7	12 3.9	- 8 53.7	+0.1643	0.5759	0.1782	+54	-22
g Pleiadum	6.3	0.42	7.8	23 57.4	15 9.9	- 5 56.0	-0.3930	0.5797	0.1708	+23	-50
17 Tauri	4.3	+0.42	+ 7.9	+23 46.9	15 11.8	- 5 53.2	-0.2124	0.5797	+0.1708	+32	-40
18 Tauri	6.3	0.42	7.7	24 30.5	15 18.5	- 5 46.8	-0.9262	0.5798	0.1704	- 9	-65
19 Tauri	5.0	0.42	7.8	24 8.1	15 19.3	- 5 46.0	-0.5453	0.5798	0.1704	+15	-59
20 Tauri	5.0	0.42	7.8	24 2.3	15 34.0	- 5 31.8	-0.4063	0.5799	0.1697	+22	-51
21 Tauri	7.0	0.42	7.8	24 13.5	15 35.8	- 5 30.1	-0.5886	0.5799	0.1697	+12	-61
22 Tauri	7.0	+0.42	+ 7.8	+24 11.9	15 39.2	- 5 26.8	-0.5518	0.5801	+0.1695	+14	-59
23 Tauri	4.7	0.42	7.9	23 37.2	15 46.3	- 5 20.0	+0.0485	0.5801	0.1693	+47	-27
24 Tauri	8.0	0.42	7.9	23 47.4	16 10.4	- 4 56.8	-0.0551	0.5806	0.1683	+41	-32
η Tauri	3.0	0.42	7.9	23 46.7	16 13.5	- 4 53.9	-0.0351	0.5806	0.1681	+42	-31
B. A. C. 1170	6.3	0.42	8.1	23 5.8	16 34.6	- 4 33.7	+0.7068	0.5811	0.1673	+90	+ 7
B. A. C. 1171	7.8	+0.41	+ 7.9	+24 1.3	16 37.4	- 4 31.0	-0.2122	0.5811	+0.1673	+32	-40
26 Tauri	7.0	0.41	8.0	23 32.0	16 48.3	- 4 20.4	+0.3073	0.5815	0.1667	+63	-14
27 Tauri	4.0	0.41	7.9	23 43.8	16 53.3	- 4 15.7	+0.1237	0.5816	0.1667	+51	-23
28 Tauri	6.2	0.41	7.9	23 48.8	16 53.7	- 4 15.3	+0.0418	0.5816	0.1667	+47	-27
36 Tauri	6.0	0.38	8.1	23 48.9	22 47.9	+ 1 24.7	+0.9774	0.5879	0.1510	+90	+26
p Tauri	6.0	+0.36	+ 7.7	+26 12.3	30 1 14.2	+ 3 45.0	-1.0490	0.5906	+0.1445	-19	-64
χ Tauri	5.7	0.34	8.1	25 22.8	5 41.7	+ 8 1.5	+0.3915	0.5954	0.1317	+69	- 6
W. iv, 1421	6.0	+0.29	+ 8.0	+27 53.9	22 54.6	+ 0 30.3	-0.2979	0.6102	+0.0768	+27	-36
JULY.											
22 Aurigæ	7.0	+0.28	+ 7.9	+28 50.4	1 3 45.2	+ 5 8.0	-0.8937	0.6135	+0.0601	- 9	-61
β Tauri	2.0	0.28	8.0	28 31.1	4 47.6	+ 6 7.7	-0.5156	0.6141	0.0565	+15	-48
B. A. C. 1772	6.3	0.29	8.0	29 9.4	9 22.1	+10 29.9	-0.9230	0.6165	+0.0402	-11	-61
				NEW	*MOON.*						
υ^1 Cancri	6.0	+0.53	+ 6.3	+24 53.0	3 20 50.5	- 4 39.7	-0.7290	0.5969	-0.1659	+ 4	-65
υ^2 Cancri	5.8	0.54	6.1	24 29.9	21 34.9	- 3 57.1	-0.4659	0.5964	0.1679	+19	-53
υ^3 Cancri	6.0	0.56	6.1	24 26.4	22 40.0	- 2 54.7	-0.6001	0.5953	0.1709	+11	-61
υ^4 Cancri	5.7	0.55	6.1	24 26.8	23 14.5	- 2 21.6	-0.7063	0.5946	0.1725	+ 5	-65
B. A. C. 3138	6.3	0.67	4.7	21 43.3	4 15 4.8	-11 9.5	-1.0860	0.5785	0.2110	-19	-68
B. A. C. 3206	6.3	+0.67	+ 4.1	+20 14.8	19 35.7	- 6 49.1	-0.6008	0.5735	-0.2204	+12	-66
26 Leonis	7.7	0.78	1.9	15 43.6	5 9 35.4	+ 6 39.3	+0.6146	0.5590	0.2445	+85	- 6
34 Leonis	6.3	0.81	1.0	13 52.7	15 24.8	-11 43.9	+1.0120	0.5529	0.2525	+90	+15
37 Leonis	5.7	0.83	+ 0.9	14 15.4	17 37.1	- 9 36.3	+0.0748	0.5507	0.2554	+48	-35
l Leonis	5.3	0.95	- 1.3	11 6.4	6 8 19.2	+ 4 35.6	-0.6374	0.5376	0.2696	+11	-77
χ Leonis	4.8	+0.97	- 2.9	+ 7 54.5	15 41.8	+11 43.6	+0.5795	0.5319	-0.2745	+80	-13
B. A. C. 3837	6.3	1.03	3.0	8 38.3	19 56.3	- 8 9.7	-1.3280	0.5288	0.2764	-36	-81
σ Leonis	4.1	1.03	3.9	6 36.5	23 21.0	- 4 52.2	-0.2083	0.5267	0.2778	+34	-55
80 Leonis	6.5	1.03	4.7	4 26.5	7 1 36.9	- 2 40.6	+1.3580	0.5250	0.2786	+84	+40
89 Leonis	6.2	1.07	5.3	3 38.8	5 45.3	+ 1 19.9	+1.0150	0.5228	0.2796	+90	+10
β Virginis	3.7	+1.14	- 6.5	+ 2 21.8	13 42.7	+ 9 2.4	+0.1059	0.5186	-0.2802	+50	-39
13 Virginis	6.1	1.26	8.3	- 0 12.0	8 3 43.1	- 1 23.0	-1.1800	0.5134	0.2782	-21	-90
B. A. C. 4394	6.0	1.49	12.7	8 25.2	9 5 2.0	- 0 49.7	+0.4923	0.5097	0.2645	+71	-19
56 Virginis	7.0	1.52	13.3	9 48.7	8 11.4	+ 2 14.0	+1.1270	0.5097	0.2621	+80	+18
58 Virginis	7.0	1.53	13.5	9 59.5	9 34.3	+ 3 34.5	+0.9576	0.5095	0.2627	+80	+ 7
62 Virginis	7.0	+1.54	-13.7	-10 44.4	11 2.1	+ 4 59.6	+1.3670	0.5098	-0.2597	+79	+42
α Virginis	1.5	+1.58	-13.8	-10 36.7	13 30.4	+ 7 23.5	+0.5919	0.5101	-0.2575	+76	-14

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
86 Virginis	5.9	+1.71	-14.6	-11 53.9	10 0 1.8	- 6 24.1	-0.7069	0.5113	-0.2470	+ 4	-90
B. A. C. 4700	5.6	1.86	15.1	15 48.4	12 31.6	+ 5 43.0	+0.4710	0.5145	0.2320	+64	-20
B. A. C. 4923	7.3	2.18	17.5	20 56.4	11 11 21.3	+ 3 50.4	+1.0740	0.5226	0.1981	+69	+18
42 Libræ	5.7	2.51	17.1	23 28.7	12 7 51.3	- 0 19.1	+0.1546	0.5315	0.1604	+37	-35
B. A. C. 5197	6.0	2.55	17.1	24 23.3	10 26.3	+ 2 10.8	+0.7372	0.5325	0.1554	+65	- 3
A Scorpii (2d star)	5.2	+2.61	-17.0	-25 0.9	14 3.8	+ 5 41.2	+0.8786	0.5342	-0.1477	+65	+ 7
B. A. C. 5253	5.8	2.60	16.8	24 13.3	14 12.7	+ 5 49.7	-0.0109	0.5343	0.1474	+28	-45
B. A. C. 5254	5.8	2.60	16.6	23 40.0	14 14.3	+ 5 51.4	-0.6216	0.5343	0.1473	- 3	-89
B. A. C. 5255	6.0	2.61	16.8	25 5.9	14 20.4	+ 5 57.3	+0.9296	0.5343	0.1471	+65	+ 9
3 Scorpii	6.7	2.61	17.0	24 56.0	14 33.1	+ 6 9.5	+0.7164	0.5346	0.1470	+66	- 4
B. A. C. 5347	6.0	+2.62	-16.7	-26 2.8	20 45.7	-11 50.3	+1.0670	0.5369	-0.1334	+64	+20
σ Scorpii	3.4	2.79	15.8	25 20.6	13 2 46.9	- 6 1.0	-0.4667	0.5394	0.1200	+ 2	-75
α Scorpii	1.4	2.85	15.6	26 12.1	6 30.9	- 2 24.6	+0.0440	0.5406	0.1116	+27	-42
B. A. C. 5800	7.5	3.13	13.1	26 51.6	14 2 41.6	- 6 55.4	-0.9979	0.5467	0.0628	-35	-90
43 Ophiuchi	5.8	3.19	12.7	28 2.6	6 44.2	- 3 1.2	+0.0755	0.5475	0.0527	+23	-40
3 Sagittarii *var.*	5.0	+3.33	-10.8	-27 47.6	17 30.0	+ 7 21.3	-0.6203	0.5488	-0.0251	-15	-90
γ^1 Sagittarii *var.*	6.0	3.45	9.6	29 35.2	15 1 12.5	- 9 11.4	+1.2490	0.5491	0.0054	+60	+48
B. A. C. 6127	5.1	3.43	9.2	28 28.3	2 35.5	- 7 51.4	+0.0074	0.5489	-0.0015	+15	-44
φ Sagittarii	3.7	3.52	5.7	27 6.1	19 22.3	+ 8 20.6	-1.1810	0.5470	+0.0411	-51	-88
τ Sagittarii	3.6	3.59	3.8	27 49.6	16 4 56.7	- 6 24.7	+0.1335	0.5445	0.0650	+27	-37
B. A. C. 6628	5.9	+3.62	- 2.2	-28 4.2	12 55.5	+ 1 17.8	+0.9988	0.5419	+0.0843	+62	+16
B. A. C. 6666	5.8	3.60	- 1.7	27 12.1	15 24.0	+ 3 41.3	+0.2484	0.5400	0.0910	+35	-30
ω Sagittarii	5.1	3.60	+ 1.0	26 34.8	17 3 26.4	- 8 40.3	+0.8100	0.5358	0.1175	+63	+ 2
A Sagittarii	5.3	3.60	1.2	26 28.9	4 54.7	- 7 15.0	+0.8746	0.5348	0.1206	+64	+ 6
17 Capricorni	6.0	3.42	5.7	21 53.9	18 3 39.0	- 9 14.4	-0.9441	0.5231	0.1661	-20	-90
B. A. C. 7325	6.9	+3.35	+ 7.4	-20 36.2	13 51.4	+ 0 39.5	-0.5936	0.5177	+0.1838	+ 3	-84
χ Capricorni	5.4	3.38	7.7	21 37.1	14 46.4	+ 1 32.3	+0.7026	0.5171	0.1852	+68	- 6
26 Capricorni	7.0	3.35	7.6	20 37.2	15 8.3	+ 1 53.6	-0.3365	0.5171	0.1860	+16	-64
27 Capricorni	6.5	3.36	7.7	20 58.8	15 16.5	+ 2 1.5	+0.0869	0.5169	0.1862	+37	-40
φ Capricorni	5.5	3.38	8.3	21 5.4	18 20.7	+ 5 0.1	+0.7893	0.5150	0.1911	+69	- 1
γ Capricorni	3.7	+3.18	+10.0	-17 8.2	19 6 55.1	- 6 48.1	-1.0700	0.5088	+0.2095	-22	-90
B. A. C. 7558	8.0	3.16	10.2	16 27.1	9 7.9	- 4 39.2	-1.3610	0.5076	0.2124	-54	-72
δ Capricorni	2.8	3.16	10.4	16 36.4	10 32.2	- 3 17.4	-0.8904	0.5069	0.2144	-10	-90
39 Aquarii	6.4	3.03	12.1	14 42.7	23 58.5	+ 9 45.6	+0.0110	0.5008	0.2303	+39	-45
45 Aquarii	6.3	2.99	12.4	13 49.9	20 3 30.4	-10 48.4	-0.1378	0.4996	0.2318	+32	-52
50 Aquarii	6.1	+2.98	+12.9	-14 3.8	6 25.8	- 7 58.0	+0.8041	0.4984	+0.2370	+76	- 2
B. A. C. 7835	6.5	2.95	13.2	13 27.3	9 26.2	- 5 2.8	+0.8513	0.4973	0.2400	+77	+ 1
58 Aquarii	6.7	2.90	12.8	11 26.7	10 21.7	- 4 8.8	-1.1390	0.4972	0.2408	-23	-90
64 Aquarii	6.9	2.84	13.2	10 34.5	14 29.4	- 0 8.0	-1.0930	0.4957	0.2444	-19	-90
65 Aquarii	7.0	2.84	13.5	10 39.3	16 31.8	+ 1 51.0	-0.5054	0.4951	0.2460	+16	-75
70 Aquarii	6.2	+2.81	+14.0	-11 6.7	19 31.1	+ 4 45.3	+0.7355	0.4945	+0.2484	+78	- 6
Lalande 44734	6.8	2.80	14.1	10 37.1	21 49.7	+ 7 0.0	+0.7696	0.4939	0.2501	+75	- 4
81 Aquarii	6.6	2.70	14.0	7 37.6	21 2 36.9	+11 39.2	-1.3090	0.4928	0.2536	-35	-90
h^1 Aquarii	5.4	2.70	14.3	8 15.7	4 40.6	-10 20.3	-0.0839	0.4922	0.2548	+38	-49
h^2 Aquarii	7 4	2.70	14.4	8 19.4	4 45.8	-10 15.3	+0.0055	0.4922	0.2548	+42	-44
h^3 Aquarii	7.0	+2 71	+14.5	- 8 30.3	5 4.6	- 9 47.2	+0.2846	0.4922	+0.2553	+58	-30
h^4 Aquarii	8.0	2.70	14.4	8 15.8	5 48.3	- 9 14.6	+0.2061	0.4921	0.2556	+54	-34
96 Aquarii	5.6	2.61	14.5	5 42.0	12 32.4	- 2 41.6	-0.8608	0.4912	0.2593	- 1	-90
B. A. C. 8187	6.3	2.55	14.9	5 6.4	18 9.0	+ 2 45.7	-0.0435	0.4908	0.2619	+41	-47
20 Piscium	5.5	2.44	15.3	3 20.8	22 4 20.5	-11 19.6	+0.7291	0.4906	0.2656	+84	- 7
Lalande 47041	7.1	+2.36	+15.2	- 0 51.8	10 52.9	- 4 58.0	-0.2183	0.4915	+0.2671	+35	-56
44 Piscium	5.9	2.22	15.6	+ 1 21.4	23 0 54.5	+ 8 40.3	+1.1350	0.4942	0.2677	+90	+18
62 Piscium	6.0	2.06	14.5	6 43.6	13 12.3	- 3 22.6	-1.3420	0.4986	0.2657	-37	-83
B. A. C. 221	5.9	2.07	15.2	4 44.4	13 13.3	- 3 21.6	+0.7859	0.4986	0.2657	+90	- 3
B. A. C. 274	6.2	2.01	15.1	+ 5 55.0	19 19.7	+ 2 34.3	+1.1470	0.5019	0.2638	+90	+20
70 Piscium	8.0	+1.99	+14.7	+ 7 22.3	20 31.3	+ 3 43.8	-0.0906	0.5023	+0.2635	+40	-48

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

JULY.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0. Δα	Red'ns from 1894.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
		s	"	° '	d h m	h m				°	°
ε Piscium	4.2	+1.99	+14.8	+ 7 19.4	23 20 57.8	+ 4 9.5	+0.0781	0.5025	+0.2632	+49	-39
100 Piscium	6.8	1.82	13.9	12 1.1	24 13 20.6	- 3 56.8	-0.6561	0.5025	0.2599	+10	-77
π Piscium	5.7	1.82	14.0	11 36.2	14 28.6	- 2 50.9	+0.0686	0.5137	0.2531	+48	-37
B. A. C. 490	7.5	1.82	14.0	11 32.4	14 45.5	- 2 34.5	+0.2074	0.5137	0.2529	+56	-30
19 Arietis	5.7	1.66	13.4	14 47.2	25 7 59.7	- 9 52.7	+1.0210	0.5278	0.2362	+90	+17
27 Arietis	6.3	+1.58	+12.7	+17 14.3	16 18.9	- 1 49.8	+0.3877	0.5359	+0.2257	+67	-17
B. A. C. 782	7.0	1.57	12.4	18 24.9	17 32.2	- 0 39.0	-0.5588	0.5373	0.2240	+15	-66
μ Arietis	6.0	1.53	11.9	19 33.8	21 30.5	+ 3 11.2	-0.8702	0.5416	0.2182	- 3	-70
47 Arietis	6.0	1.47	11.8	20 14.8	26 4 29.6	+ 9 55.8	-0.0893	0.5486	0.2066	+39	-38
ζ Arietis	4.7	1.41	11.6	20 39.3	11 47.5	- 7 1.9	+0.9504	0.5563	0.1932	+90	+18
B. A. C. 1055	6.8	+1.37	+11.3	+21 40.2	15 52.5	- 3 5.8	+0.6803	0.5610	+0.1850	+90	+ 4
66 Arietis	6.0	1.36	11.0	22 26.5	17 29.1	- 1 32.7	+0.1857	0.5627	0.1816	+55	-22
7 Tauri	6.0	1.34	10.4	24 6.7	19 57.3	+ 0 49.9	-1.0780	0.5656	0.1762	-20	-66
9 Tauri	7.0	1.32	10.9	22 51.8	21 1.1	+ 1 50.3	+0.3823	0.5667	0.1739	+68	-11
g Pleiadum	6.3	1.30	10.5	23 57.5	27 0 12.6	+ 4 55.6	-0.1900	0.5702	0.1666	+34	-39
17 Tauri	4.3	+1.30	+10.6	+23 47.0	0 14.6	+ 4 57.5	-0.0068	0.5702	+0.1664	+44	-29
18 Tauri	6.3	1.30	10.3	24 30.6	0 21.5	+ 5 4.2	-0.7259	0.5703	0.1663	+ 4	-65
19 Tauri	5.0	1.30	10.5	24 8.2	0 22.3	+ 5 5.0	-0.3443	0.5703	0.1663	+26	-47
20 Tauri	5.0	1.30	10.5	24 2.4	0 37.5	+ 5 19.6	-0.2035	0.5707	0.1655	+33	-39
21 Tauri	7.0	1.30	10.4	24 13.6	0 39.3	+ 5 21.3	-0.3868	0.5707	0.1655	+23	-49
22 Tauri	7.0	+1.30	+10.4	+24 12.0	0 42.8	+ 5 24.7	-0.3527	0.5709	+0.1654	+25	-48
23 Tauri	4.7	1.29	10.6	23 37.3	0 50.0	+ 5 31.6	+0.2561	0.5711	0.1650	+59	-16
24 Tauri	8.0	1.29	10.6	23 47.5	1 14.9	+ 5 55.6	+0.1544	0.5713	0.1641	+53	-21
η Tauri	3.0	1.29	10.6	23 46.8	1 18.2	+ 5 58.7	+0.1730	0.5713	0.1640	+54	-20
B. A. C. 1170	6.3	1.29	10.8	23 5.9	1 39.9	+ 6 19.6	+0.9253	0.5718	0.1630	+90	+20
B. A. C. 1171	7.8	+1.29	+10.5	+24 1.4	1 42.7	+ 6 22.3	-0.0085	0.5718	+0.1630	+44	-29
26 Tauri	7.0	1.28	10.6	23 32.1	1 54.0	+ 6 33.2	+0.5202	0.5720	0.1625	+79	- 2
27 Tauri	4.0	1.28	10.6	23 43.9	1 59.1	+ 6 38.0	+0.3338	0.5722	0.1624	+65	-12
28 Tauri	6.2	1.28	10.6	23 48.9	1 59.5	+ 6 38.4	+0.2491	0.5722	0.1624	+59	-16
36 Tauri	6.0	1.23	10.5	23 49.0	8 3.9	-11 31.3	+1.1810	0.5784	0.1471	+90	+42
p Tauri	6.0	+1.22	+ 9.8	+26 12.4	10 34.4	- 9 6.8	-0.8732	0.5813	+0.1406	- 6	-64
χ Tauri	5.7	1.18	9.9	25 22.9	15 9.5	- 4 42.6	+0.5762	0.5860	0.1279	+85	+ 4
W. iv, 1421	6.0	1.06	8.7	27 53.9	28 8 49.2	-11 47.1	-0.1614	0.6019	0.0739	+35	-29
22 Aurigæ	7.0	1.03	8.3	28 50.4	13 46.9	- 7 2.1	-0.7721	0.6057	0.0573	0	-61
β Tauri	2.0	1.03	8.4	28 31.1	14 50.4	- 6 1.4	-0.3932	0.6064	0.0536	+22	-40
B. A. C. 1772	6.3	+1.00	+ 8.1	+29 9.4	19 31.0	- 1 33.0	-0.8128	0.6089	+0.0374	- 3	-61
136 Tauri	5.3	0.96	8.2	27 35.3	29 0 33.4	+ 3 16.1	+0.8869	0.6115	+0.0196	+90	+32
κ Aurigæ	4.7	0.92	7.5	29 32.3	8 20.6	+10 42.7	-0.9979	0.6141	-0.0084	-17	-60
49 Aurigæ	5.7	0.90	7.4	28 6.4	15 22.0	- 6 34.7	+0.2662	0.6151	0.0340	+61	- 3
53 Aurigæ	6.0	0.89	7.2	29 4.6	16 28.3	- 5 31.4	-0.7290	0.6151	0.0379	+ 2	-61
54 Aurigæ	6.0	+0.89	+ 7.2	+28 21.5	16 53.8	- 5 7.0	-0.0378	0.6151	-0.0396	+42	-19
25 Geminorum	6.5	0.89	7.2	28 17.7	17 31.8	- 4 30.7	0.0000	0.6149	0.0420	+44	-18
28 Geminorum	6.0	0.88	7.0	29 4.8	18 43.2	- 3 22.4	-0.8250	0.6148	0.0461	- 4	-61
W. vi, 1656	8.2	0.87	7.0	26 59.6	30 1 29.8	+ 3 7.1	+0.8305	0.6141	0.0704	+90	+24
47 Geminorum	6.0	0.86	6.8	27 1.9	4 10.8	+ 5 40.0	+0.5909	0.6134	0.0800	+87	+10
53 Geminorum	6.3	+0.85	+ 6.6	+28 5.0	5 47.0	+ 7 12.0	-0.5742	0.6130	-0.0891	+12	-54
59 Geminorum	6.9	0.84	6.4	27 50.6	8 51.2	+10 8.0	-0.6180	0.6117	0.0963	+ 9	-57
ι Geminorum	4.0	0.84	6.4	28 0.6	9 16.5	+10 31.7	-0.8239	0.6116	0.0978	- 3	-62
b^2 Geminorum	6.3	0.84	6.2	28 8.2	10 43.9	+11 55.8	-1.0930	0.6110	0.1028	-24	-62
B. A. C. 2472	8.0	0.84	6.2	28 7.9	11 2.1	-11 46.9	-1.1190	0.6108	0.1035	-26	-62
υ Geminorum	4.3	+0.83	+ 6.2	+27 7.9	12 56.4	- 9 57.7	-0.3415	0.6099	-0.1104	+25	-41
				NEW	*MOON.*						

AUGUST.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle *H*	*Y*	*x'*	*y'*	N.	S.
26 Leonis	7.7	+0.81	+ 1.7	+15 43.6	1 19 55.5	- 5 12.4	+0.4899	0.5608	-0.2485	+74	-14
34 Leonis	6.3	+0.81	+ 0.9	+13 52.7	2 1 38.3	+ 0 17.7	+0.8688	0.5589	-0.2575	+90	+ 6

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
37 Leonis	5.7	+0.82	+ 0.7	+14 15.4	2 3 48.1	+ 2 22.8	−0.0642	0.5571	−0.2603	+41	−43
l Leonis	5.3	0.85	− 1.0	11 6.4	18 10.5	− 7 45.1	−0.8024	0.5449	0.2752	+ 2	−69
χ Leonis	4.8	0.86	2.2	7 54.5	3 1 22.1	− 0 48.2	+0.3860	0.5394	0.2801	+66	−23
σ Leonis	4.1	0.89	3.1	6 36.6	8 49.0	+ 6 23.8	−0.4127	0.5346	0.2835	+23	−67
80 Leonis	6.5	0.88	3.7	4 26.5	11 1.2	+ 8 31.7	+1.1330	0.5330	0.2843	+90	+19
89 Leonis	6.2	+0.90	− 4.2	+ 3 38.8	15 2.7	−11 34.6	+0.7900	0.5308	−0.2853	+90	− 3
β Virginis	3.7	0.95	5.3	+ 2 21.6	22 46.5	− 4 5.9	−0.1196	0.5266	0.2860	+38	−50
13 Virginis	6.1	1.04	7.0	− 0 12.0	4 12 22.5	+ 9 4.3	−1.4060	0.5213	0.2836	−46	−77
B. A. C. 4394	6.0	1.21	11.0	8 25.2	5 12 57.6	+ 8 53.8	+0.2230	0.5168	0.2689	+55	−33
56 Virginis	7.0	1.24	11.6	9 48.7	16 1.8	+11 52.1	+0.8478	0.5168	0.2663	+80	0
62 Virginis	7.0	+1.25	−12.1	−10 44.4	18 47.8	− 9 27.0	+1.0820	0.5166	−0.2637	+79	+15
α Virginis	1.5	1.28	12.1	10 36.7	21 12.1	− 7 7.1	+0.3200	0.5168	0.2613	+59	−28
86 Virginis	5.9	1.40	13.1	11 53.9	6 7 27.3	+ 2 49.1	−0.9594	0.5175	0.2500	−10	−90
B. A. C. 4700	5.6	1.54	14.7	15 48.3	19 39.5	− 9 21.5	+0.1994	0.5199	0.2343	+49	−34
B. A. C. 4923	7.3	1.87	16.8	20 56.4	7 18 2.8	−11 40.6	+0.8130	0.5247	0.1983	+69	0
42 Libræ	5.7	+2.22	−16.8	−23 28.7	8 14 15.5	+ 7 52.6	−0.0815	0.5332	−0.1601	+25	−49
B. A. C. 5197	6.0	2.27	17.0	24 23.3	16 48.8	+10 20.9	+0.5029	0.5343	0.1546	+56	−17
b Scorpii	5.3	2.32	17.2	25 27.5	19 10.6	−11 22.1	+1.2800	0.5351	0.1498	+65	+44
A Scorpii (2d star)	5.2	2.33	17.0	25 0.9	20 24.0	−10 11.0	+0.6451	0.5356	0.1471	+63	− 9
B. A. C. 5253	5.8	2.32	16.7	24 13.3	20 32.8	−10 2.6	−0.2392	0.5356	0.1468	+16	−59
B. A. C. 5254	5.8	+2.32	−16.6	−23 40.0	20 34.4	−10 1.0	−0.8480	0.5356	−0.1468	−16	−90
B. A. C. 5255	6.0	2.32	17.0	25 5.9	20 40.4	− 9 55.2	+0.6942	0.5357	0.1467	+65	− 6
3 Scorpii	6.7	2.34	17.0	24 56.0	20 53.0	− 9 43.1	+0.4840	0.5357	0.1461	+54	−18
π Scorpii	3.4	2.38	17.1	25 48.8	22 47.7	− 7 52.2	+1.1660	0.5363	0.1419	+64	+29
B. A. C. 5347	6.0	2.46	16.8	26 2.8	9 3 2.2	− 3 46.3	+0.8414	0.5379	0.1325	+64	+ 4
σ Scorpii	3.4	+2.55	−16.0	−25 20.6	9 0.6	+ 2 0.1	−0.6776	0.5398	−0.1190	−10	−90
α Scorpii	1.4	2.62	15.9	26 12.1	12 43.1	+ 5 35.0	−0.1642	0.5409	0.1104	+16	−54
B. A. C. 5800	7.5	2.97	13.8	26 51.6	10 8 45.5	+ 0 58.9	−1.1770	0.5458	0.0613	−19	−89
43 Ophiuchi	5.8	3.06	13.6	28 2.6	12 50.4	+ 4 52.4	−0.0992	0.5464	0.0511	+13	−50
3 Sagittarii *var.*	5.0	3.22	11.7	27 47.6	23 35.3	− 8 45.1	−0.7776	0.5475	0.0236	−25	−90
γ¹ Sagittarii *var.*	6.0	+3.37	−10.9	−29 35.2	11 7 17.6	− 1 18.8	+1.1000	0.5475	−0.0039	+60	+26
B. A. C. 6127	5.1	3.36	10.4	28 28.3	8 40.7	+ 0 1.3	−0.1366	0.5474	−0.0002	+ 7	−53
τ Sagittarii	3.6	3.64	5.1	27 49.6	12 11 2.8	+ 1 28.8	+0.0315	0.5430	+0.0663	+22	−43
B. A. C. 6628	5.9	3.72	3.5	28 4.3	19 2.0	+ 9 11.7	+0.9109	0.5405	0.0859	+61	+ 9
B. A. C. 6666	5.8	3.71	− 2.8	27 12.1	21 30.8	+11 35.5	+0.1666	0.5398	0.0917	+31	−35
ω Sagittarii	5.1	+3.78	+ 0.1	−26 34.8	13 9 33.4	− 0 45.8	+0.7444	0.5350	+0.1191	+62	− 2
A Sagittarii	5.3	3.78	0.4	26 28.9	11 1.8	+ 0 39.6	+0.8147	0.5340	0.1224	+64	+ 2
17 Capricorni	6.0	3.72	5.8	21 53.9	14 9 45.4	− 1 20.6	−0.9614	0.5231	0.1681	−21	−90
η Capricorni	5.1	3.69	7.7	20 16.3	18 47.7	+ 7 24.8	−1.1700	0.5186	0.1840	−34	−90
B. A. C. 7325	6.9	3.70	7.9	20 36.2	19 56.6	+ 8 31.6	−0.5909	0.5181	0.1860	+ 3	−84
χ Capricorni	5.4	+3.73	+ 8.0	−21 37.1	20 51.5	+ 9 24.8	+0.7034	0.5176	+0.1874	+68	− 6
26 Capricorni	5.4	3.70	8.1	20 37.2	21 13.3	+ 9 46.0	−0.3341	0.5174	0.1879	+16	−64
27 Capricorni	6.5	3.71	8.1	20 58.8	21 21.5	+ 9 53.9	+0.0905	0.5174	0.1883	+38	−39
φ Capricorni	5.5	3.72	8.6	21 5.4	15 0 25.3	−11 7.8	+0.7989	0.5156	0.1932	+69	0
γ Capricorni	3.7	3.60	11.2	17 8.2	12 57.4	+ 1 1.7	−1.0300	0.5097	0.2117	−20	−90
B. A. C. 7558	8.0	+3.58	+11.6	−16 27.1	15 9.8	+ 3 10.2	−1.3180	0.5088	+0.2148	−45	−90
δ Capricorni	2.8	3.58	11.9	16 36.3	16 33.7	+ 4 31.6	−0.8484	0.5079	0.2166	− 7	−90
ι Aquarii	4.4	3.54	13.5	14 22.8	16 2 46.4	− 9 33.5	−1.0200	0.5036	0.2294	−16	−90
39 Aquarii	6.4	3.52	14.0	14 42.7	5 56.8	− 6 28.6	+0.0789	0.5024	0.2329	+43	−40
42 Aquarii	5.8	3.49	14.3	13 21.4	8 17.3	− 4 12.1	−0.8642	0.5018	0.2354	− 6	−90
45 Aquarii	6.3	+3.49	+14.5	−13 49.9	9 27.7	− 3 3.7	−0.0642	0.5010	+0.2368	+36	−48
50 Aquarii	6.1	3.49	14.9	14 3.8	12 22.3	− 0 14.0	+0.8833	0.5001	0.2396	+76	+ 2
54 Aquarii	7.0	3.43	15.1	11 45.8	13 35.9	+ 0 57.3	−1.3510	0.4998	0.2407	−44	−81
B. A. C. 7835	6.5	3.47	15.4	13 27.2	15 21.8	+ 2 40.2	+0.9342	0.4992	0.2425	+77	+ 6
58 Aquarii	6.7	3.42	15.4	11 26.6	16 17.1	+ 3 34.0	−1.0520	0.4987	0.2434	−16	−90
64 Aquarii	6.9	+3.38	+16.1	−10 34.4	20 23.6	+ 7 33.5	−0.9970	0.4974	+0.2469	−12	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0. Δα	Red'ns from 1894.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
65 Aquarii	7.0	+3.37	+16.4	−10 39.2	16 22 25.5	+ 9 32.3	−0.4058	0.4968	+0.2486	+21	−68
70 Aquarii	6.2	3.37	16.8	11 6.6	17 1 23.9	−11 34.6	+0.8368	0.4962	0.2513	+79	0
Lalande 44734	6.8	3.35	17.0	10 37.0	3 41.9	− 9 20.3	+0.8762	0.4953	0.2528	+79	+ 2
81 Aquarii	6.6	3.28	17.3	7 37.5	8 27.7	− 4 42.6	−1.1850	0.4946	0.2563	−24	−90
h^1 Aquarii	5.4	3.28	17.6	8 15.6	10 30.8	− 2 42.9	+0.0365	0.4940	0.2575	+45	−42
h^2 Aquarii	7.4	+3.28	+17.7	− 8 19.3	10 36.0	− 2 37.9	+0.1257	0.4940	+0.2575	+49	−38
h^3 Aquarii	7.0	3.29	17.7	8 30.2	10 54.6	− 2 19.8	+0.4046	0.4940	0.2578	+65	−24
h^4 Aquarii	8.0	3.28	17.8	8 15.7	11 38.2	− 1 37.4	+0.3279	0.4940	0.2581	+61	−28
96 Aquarii	5.6	3.21	18.2	5 41.9	18 20.5	+ 4 53.8	−0.7274	0.4932	0.2619	+ 6	−90
B. A. C. 8184	6.3	3.17	18.7	5 6.3	23 55.9	+10 19.9	+0.0980	0.4922	0.2644	+49	−39
20 Piscium	5.5	+3.08	+19.3	− 3 20.8	18 10 5.3	− 3 47.3	+0.8886	0.4922	+0.2679	+87	+ 2
Lalande 47041	7.1	3.02	19.4	− 0 51.8	16 36.7	+ 2 33.2	−0.0560	0.4926	0.2693	+42	−47
60 Piscium	6.2	2.81	19.6	+ 6 10.0	19 18 28.5	+ 3 41.7	−0.6761	0.4986	0.2669	+10	−84
62 Piscium	6.0	2.81	19.5	6 43.6	18 56.8	+ 4 9.2	−1.1530	0.4986	0.2668	−19	−83
B. A. C. 221	5.9	2.82	20.0	4 44.4	18 57.8	+ 4 10.2	+0.9854	0.4986	0.2668	+90	+ 9
B. A. C. 274	6.2	+2.77	+20.0	+ 5 55.0	20 1 5.6	+10 7.6	+1.3500	0.5012	+0.2643	+90	+39
70 Piscium	8.0	2.76	19.7	7 22.4	2 17.6	+11 17.5	+0.1087	0.5018	0.2640	+50	−38
ε Piscium	4.2	2.75	19.7	7 19.5	2 44.2	+11 43.3	+0.2764	0.5021	0.2638	+60	−29
100 Piscium	6.8	2.63	18.9	12 1.2	19 13.9	+ 3 44.0	−0.4532	0.5109	0.2535	+21	−66
π Piscium	5.7	2.63	18.9	11 36.3	20 22.6	+ 4 50.5	+0.2867	0.5114	0.2527	+60	−27
B. A. C. 490	7.5	+2.62	+18.9	+11 32.5	20 39.7	+ 5 7.2	+0.4265	0.5118	+0.2525	+70	−19
19 Arietis	5.7	2.50	18.2	14 47.3	21 14 6.7	− 1 58.3	+1.2400	0.5242	0.2348	+90	+34
27 Arietis	6.3	2.45	17.3	17 14.4	22 34.0	+ 6 12.7	+0.5998	0.5315	0.2241	+84	− 6
B. A. C. 782	7.0	2.44	17.0	18 25.0	23 48.7	+ 7 24.9	−0.3582	0.5323	0.2221	+26	−55
μ Arietis	6.0	2.41	16.3	19 33.9	22 3 51.5	+11 19.7	−0.6730	0.5362	0.2160	+ 9	−70
47 Arietis	6.0	+2.36	+16.0	+20 14.9	10 59.1	− 5 47.1	+0.1129	0.5425	+0.2044	+51	−28
B. A. C. 920	7.0	2.36	15.6	21 12.0	11 20.3	− 5 26.6	−0.8061	0.5431	0.2037	0	−69
ε Arietis	4.3	2.36	15.7	20 55.3	11 29.6	− 5 17.6	−0.4820	0.5430	0.2034	+19	−59
ζ Arietis	4.7	2.31	15.6	20 39.4	18 26.7	+ 1 24.9	+1.1610	0.5496	0.1905	+90	+34
B. A. C. 1055	6.8	2.29	15.0	21 40.3	22 37.4	+ 5 26.7	+0.8861	0.5539	0.1821	+90	+15
66 Arietis	6.0	+2.28	+14.7	+22 26.5	23 0 16.7	+ 7 2.4	+0.3850	0.5552	+0.1788	+68	−12
7 Tauri	6.0	2.27	14.0	24 6.7	2 48.6	+ 9 28.8	−0.8945	0.5577	0.1734	− 6	−66
9 Tauri	7,0	2.24	14.4	22 51.8	3 54.1	+10 31.9	+0.5841	0.5589	0.1711	+84	0
g Pleiadum	6.3	2.22	13.8	23 57.5	7 10.6	−10 18.8	0.0000	0.5618	0.1637	+45	−29
17 Tauri	4.3	2.22	13.9	23 47.0	7 12.6	−10 16.9	+0.1874	0.5620	0.1637	+56	−19
18 Tauri	6.3	+2.23	+13.6	+24 30.6	7 19.8	−10 10.0	−0.5451	0.5620	+0.1635	+15	−58
19 Tauri	5.0	2.23	13.8	24 8.2	7 20.6	−10 9.2	−0.1565	0.5623	0.1635	+36	−37
20 Tauri	5.0	2.22	13.8	24 2.4	7 36.2	− 9 54.2	−0.0155	0.5626	0.1629	+44	−30
21 Tauri	7.0	2.22	13.7	24 13.6	7 38.0	− 9 52.4	−0.2029	0.5626	0.1627	+33	−39
22 Tauri	7.0	2.22	13.7	24 12.0	7 41.6	− 9 48.9	−0.1650	0.5627	0.1627	+36	−37
23 Tauri	4.7	+2.22	+13.9	+23 37.3	7 49.1	− 9 41.7	+0.4522	0.5627	+0.1623	+73	− 6
24 Tauri	8.0	2.21	13.8	23 47.5	8 14.6	− 9 17.2	+0.3455	0.5633	0.1613	+66	−12
η Tauri	3.0	2.21	13.8	23 46.8	8 17.9	− 9 14.0	+0.3661	0.5633	0.1611	+67	−10
B. A. C. 1170	6.3	2.21	14.0	23 5.9	8 40.2	− 8 52.6	+1.1290	0.5639	0.1603	+90	+35
B. A. C. 1171	7.8	2.21	13.7	24 1.4	8 43.1	− 8 49.8	+0.1822	0.5639	0.1603	+55	−19
26 Tauri	7.0	+2.21	+13.9	+23 32.1	8 54.8	− 8 38.4	+0.7183	0.5639	+0.1598	+90	+ 8
27 Tauri	4.0	2.21	13.8	23 43.9	8 59.9	− 8 33.6	+0.5291	0.5639	0.1594	+80	− 2
28 Tauri	6.2	2.21	13.8	23 48.9	9 0.4	− 8 33.1	+0.4433	0.5639	0.1594	+73	− 6
p Tauri	6.0	2.15	12.4	26 12.4	17 49.8	− 0 3.8	−0.7031	0.5724	0.1377	+ 5	−64
φ Tauri	5.3	2.13	11.9	27 6.0	21 38.0	+ 3 35.7	−1.1110	0.5759	0.1277	−25	−63
χ Tauri	5.7	+2.11	+12.5	+25 22.9	22 33.0	+ 4 28.5	+0.7628	0.5768	+0.1252	+90	+14
W. iv, 1421	6.0	1.97	10.0	27 54.0	24 16 45.9	− 2 2.6	0.0000	0.5916	0.0717	+44	−20
22 Aurigæ	7.0	1.93	9.2	28 50.5	21 53.2	+ 2 51.9	−0.6308	0.5948	0.0553	+ 8	−56
β Tauri	2.0	1.92	9.2	28 31.2	22 58.9	+ 3 54.9	−0.2461	0.5955	0.0516	+30	−31
B. A. C. 1772	6.3	1.88	8.7	29 9.5	25 3 48.7	+ 8 32.5	−0.6795	0.5981	0.0357	+ 5	−58
136 Tauri	5.7	+1.81	+ 8.7	+27 35.3	9 1.0	−10 28.4	+1.0430	0.6003	+0.0181	+90	+42

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

AUGUST.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
κ Aurigæ	4.7	+1.77	+ 7.2	+29 32.3	25 17 3.5	- 2 46.5	-0.8814	0.6034	-0.0095	- 8	-60
49 Aurigæ	5.7	1.68	6.9	28 6.4	26 0 18.5	+ 4 9.8	+0.3936	0.6042	0.0347	+70	+ 3
53 Aurigæ	6.0	1.68	6.3	29 4.6	1 26.9	+ 5 15.1	-0.6183	0.6043	0.0387	+ 9	-53
54 Aurigæ	6.0	1.67	6.5	28 21.5	1 53.1	+ 5 40.2	+0.0816	0.6045	0.0402	+49	-13
25 Geminorum	6.5	1.66	6.5	28 17.7	2 32.4	+ 6 17.8	+0.1216	0.6043	0.0425	+52	-11
28 Geminorum	6.0	+1.67	+ 6.1	+29 4.8	3 46.0	+ 7 28.3	-0.7209	0.6043	-0.0468	+ 3	-61
W. vi, 1656	8.2	1.57	5.9	26 59.6	10 45.0	- 9 50.7	+0.9501	0.6039	0.0708	+90	+31
47 Geminorum	6.0	1.55	5.6	27 1.9	13 31.0	- 7 11.9	+0.7020	0.6034	0.0802	+90	+16
53 Geminorum	6.3	1.55	5.2	28 5.0	15 10.0	- 5 37.1	-0.4826	0.6030	0.0857	+17	-48
59 Geminorum	6.9	1.52	4.9	27 50.6	18 19.6	- 2 35.7	-0.5302	0.6021	0.0964	+15	-51
ι Geminorum	4.0	+1.52	+ 4.8	+28 0.6	18 45.5	- 2 10.8	-0.7372	0.6021	-0.0977	+ 2	-61
b² Geminorum	6.3	1.51	4.6	28 8.2	20 15.4	- 0 44.8	-1.0140	0.6015	0.1028	-17	-62
B. A. C. 2472	8.0	1.51	4.5	28 7.9	20 34.1	- 0 26.9	-1.0410	0.6015	0.1038	-19	-62
υ Geminorum	4.3	1.48	4.5	27 8.0	22 31.6	+ 1 25.6	-0.2581	0.6008	0.1103	+30	-37
c Geminorum	6.0	1.45	3.9	26 2.3	27 1 34.6	+ 4 21.0	+0.4777	0.5994	0.1199	+76	0
φ Geminorum	5.0	+1.44	+ 3.9	+27 2.5	5 3.0	+ 7 40.5	-0.9532	0.5984	-0.1310	-12	-63
ω¹ Cancri	6.0	1.40	3.9	25 41.1	7 51.1	+10 21.6	+0.0116	0.5965	0.1396	+45	-25
ω² Cancri	6.3	1.39	3.9	25 22.9	8 9.5	+10 39.2	+0.2691	0.5965	0.1407	+61	-13
ψ¹ Cancri	6.8	1.38	3.4	26 9.4	11 20.4	-10 17.8	-0.9603	0.5946	0.1502	-12	-64
ψ² Cancri	5.7	1.38	3.5	25 49.8	11 26.3	-10 12.2	-0.6518	0.5944	0.1503	+ 8	-62
λ Cancri	5.7	+1.33	+ 3.3	+24 21.4	15 16.9	- 6 31.1	+0.2061	0.5921	-0.1617	+57	-18
υ¹ Cancri	6.0	1.32	3.0	24 53.0	17 37.3	- 4 16.5	-0.7004	0.5909	0.1685	+ 6	-65
υ² Cancri	5.8	1.32	2.9	24 29.8	18 22.1	- 3 33.5	-0.4466	0.5900	0.1704	+20	-53
υ³ Cancri	6.0	1.31	2.5	24 26.3	19 29.0	- 2 29.3	-0.5799	0.5892	0.1738	+13	-60
υ⁴ Cancri	5.7	1.30	2.4	24 26.7	20 3.4	- 1 56.3	-0.6869	0.5889	0.1751	+ 7	-65
B. A. C. 3138	6.3	+1.17	+ 1.6	+21 43.2	28 12 3.5	-10 34.5	-1.1240	0.5771	-0.2149	-22	-68
B. A. C. 3206	6.3	+1.14	+ 1.2	+20 14.7	16 34.8	- 6 13.7	-0.6615	0.5735	-0.2246	+ 9	-69
				NEW	*MOON.*						
SEPTEMBER.											
f Virginis	6.0	+0.91	- 8.0	- 5 15.0	1 7 11.4	+ 5 24.7	+1.1240	0.5252	-0.2843	+85	+17
B. A. C. 4394	6.0	0.99	9.7	8 25.2	22 31.8	- 3 44.1	+0.0822	0.5240	0.2737	+47	-40
56 Virginis	7.0	1.00	10.2	9 48.7	2 1 31.5	- 0 50.1	+0.6976	0.5241	0.2708	+80	- 9
58 Virginis	7.0	1.01	10.3	9 59.5	2 50.1	+ 0 26.0	+0.5302	0.5241	0.2696	+72	-17
62 Virginis	7.0	1.02	10.6	10 44.4	4 13.4	+ 1 46.6	+0.9292	0.5242	0.2681	+79	+ 5
α Virginis	1.5	+1.04	-10.7	-10 36.7	6 34.2	+ 4 3.0	+0.1703	0.5242	-0.2658	+51	-36
86 Virginis	5.9	1.12	11.6	11 53.9	16 33.7	-10 16.6	-1.1010	0.5252	0.2543	-20	-90
B. A. C. 4700	5.6	1.22	13.1	15 48.3	3 4 27.1	+ 1 14.0	+0.0401	0.5271	0.2382	+40	-42
B. A. C. 4923	7.3	1.49	15.2	20 56.3	4 2 16.5	- 1 39.1	+0.6422	0.5328	0.2015	+67	-11
42 Libræ	5.7	1.80	15.8	23 28.7	22 2.2	- 6 33.0	-0.2416	0.5388	0.1615	+18	-59
B. A. C. 5197	6.0	+1.85	-16.0	-24 23.3	5 0 32.3	- 4 7.9	+0.3387	0.5395	-0.1561	+46	-26
b Scorpii	5.3	1.89	16.3	25 27.5	2 51.2	- 1 53.7	+1.1360	0.5403	0.1511	+65	+26
A Scorpii (2d star)	5.2	1.91	16.1	25 0.9	4 3.2	- 0 44.1	+0.4775	0.5404	0.1483	+53	-18
B. A. C. 5253	5.8	1.91	15.8	24 13.3	4 11.9	- 0 35.8	-0.3986	0.5404	0.1481	+ 8	-70
B. A. C. 5254	5.8	1.91	15.6	23 40.0	4 13.4	- 0 34.3	-1.0360	0.5404	0.1479	-28	-90
B. A. C. 5255	6.0	+1.92	-16.1	-25 5.9	4 19.3	- 0 28.6	+0.5279	0.5404	-0.1478	+56	-16
3 Scorpii	6.7	1.92	16.0	24 56.0	4 31.7	- 0 16.7	+0.3197	0.5406	0.1472	+45	-27
π Scorpii	3.4	1.96	16.3	25 48.8	6 24.1	+ 1 32.0	+0.9993	0.5411	0.1431	+64	+14
B. A. C. 5347	6.0	2.03	16.2	26 2.8	10 34.0	+ 5 33.2	+0.6756	0.5424	0.1336	+63	- 7
σ Scorpii	3.4	2.12	15.5	25 20.6	16 26.2	+11 13.4	-0.8273	0.5439	0.1196	-18	-90
α Scorpii	1.4	+2.19	-15.5	-26 12.0	20 5.1	- 9 15.3	-0.3203	0.5448	-0.1108	+ 8	-64
43 Ophiuchi	5.8	2.64	13.8	28 2.6	6 19 58.7	-10 16.6	-0.2430	0.5483	0.0508	+ 6	-59
3 Sagittarii *var.*	5.0	2.83	12.2	27 47.6	7 6 32.8	0 0.0	-0.9131	0.5486	0.0231	-33	-90
γ¹ Sagittarii *var.*	6.0	3.01	11.7	29 35.2	14 12.0	+ 7 23.0	+0.9607	0.5479	-0.0031	+60	+14
B. A. C. 6127	5.1	3.00	11.1	28 28.3	15 34.6	+ 8 42.8	-0.2683	0.5475	+0.0006	0	-61
τ Sagittarii	3.6	+3.38	- 6.3	-27 49.6	8 17 51.1	+10 4.7	-0.0831	0.5419	+0.0672	+16	-49

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
B. A. C. 6628	5.9	+3.48	− 4.8	−28 4.3	9 1 49.7	− 6 13.0	+0.7997	0.5392	+0.0864	+62	+ 2
B. A. C. 6666	5.8	3.48	4.0	27 12.2	4 18.4	− 3 49.3	+0.0610	0.5383	0.0924	+26	−41
ω Sagittarii	5.1	3.61	1.3	26 34.8	16 20.5	+ 7 48.8	+0.6468	0.5332	0.1196	+61	− 8
A Sagittarii	5.3	3.62	− 1.0	26 28.9	17 49.3	+ 9 14.6	+0.7169	0.5326	0.1228	+64	− 4
17 Capricorni	6.0	3.66	+ 4.8	21 53.9	10 16 33.5	+ 7 15.1	−1.0330	0.5219	0.1687	−25	−90
η Capricorni	5.1	+3.66	+ 6.8	−20 16.3	11 1 35.8	− 7 56.6	−1.2320	0.5177	+0.1848	−40	−90
B. A. C. 7325	6.9	3.68	7.0	20 36.2	2 44.8	− 6 52.6	−0.6542	0.5170	0.1866	0	−90
χ Capricorni	5.4	3.72	6.9	21 37.1	3 39.5	− 5 59.6	+0.6393	0.5164	0.1881	+67	−10
26 Capricorni	7.0	3.69	7.1	20 37.2	4 1.3	− 5 38.4	−0.3961	0.5163	0.1887	+13	−69
27 Capricorni	6.5	3.70	7.1	20 58.8	4 9.5	− 5 30.5	+0.0276	0.5163	0.1890	+35	−43
φ Capricorni	5.5	+3.72	+ 7.7	−21 5.4	7 13.2	− 2 32.4	+0.7365	0.5148	+0.1939	+68	− 5
γ Capricorni	3.7	3.66	10.9	17 8.2	19 44.4	+ 9 36.2	−1.0780	0.5094	0.2127	−23	−90
B. A. C. 7558	8.0	3.65	11.4	16 27.1	21 56.4	+11 44.3	−1.3610	0.5084	0.2158	−52	−73
δ Capricorni	2.8	3.65	11.6	16 36.3	23 20.2	−10 54.4	−0.8886	0.5079	0.2177	− 9	−90
ι Aquarii	4.4	3.65	13.5	14 22.8	12 9 31.1	− 1 1.2	−1.0490	0.5040	0.2305	−18	−90
39 Aquarii	6.4	+3.65	+14.0	−14 42.7	12 40.8	+ 2 3.0	+0.0512	0.5029	+0.2343	+42	−42
42 Aquarii	5.8	3.62	14.5	13 21.4	15 0.7	+ 4 18.9	−0.8888	0.5021	0.2368	− 7	−90
45 Aquarii	6.3	3.64	14.7	13 49.9	16 10.7	+ 5 26.9	−0.0896	0.5019	0.2381	+35	−49
50 Aquarii	6.1	3.65	15.1	14 3.8	19 4.4	+ 8 15.5	+0.8584	0.5007	0.2411	+76	+ 1
54 Aquarii	7.0	3.60	15.5	11 45.7	20 17.7	+ 9 26.7	−1.3700	0.5007	0.2423	−47	−78
B. A. C. 7835	6.5	+3.64	+15.6	−13 27.2	22 3.1	+11 9.1	+0.9107	0.4999	+0.2441	+76	+ 4
58 Aquarii	6.7	3.59	15.9	11 26.6	22 58.0	−11 57.4	−1.0650	0.4995	0.2448	−17	−90
64 Aquarii	6.9	3.57	16.8	10 34.4	13 3 3.1	− 7 59.4	−1.0080	0.4989	0.2488	−49	−90
65 Aquarii	7.0	3.57	17.0	10 39.2	5 4.3	− 6 1.6	−0.4154	0.4983	0.2505	+21	−69
70 Aquarii	6.2	3.59	17.4	11 6.6	8 1.5	− 3 9.4	+0.8245	0.4977	0.2530	+79	− 1
Lalande 44734	6.8	+3.58	+17.7	−10 37.0	10 18.5	− 0 56.3	+0.8660	0.4974	+0.2549	+79	+ 1
81 Aquarii	6.6	3.52	18.5	7 37.5	15 2.3	+ 3 39.6	−1.1820	0.4964	0.2582	−23	−90
h^1 Aquarii	5.4	3.54	18.7	8 15.6	17 4.5	+ 5 38.4	+0.0363	0.4962	0.2596	+45	−43
h^2 Aquarii	7.4	3.54	18.7	8 19.3	17 9.6	+ 5 43.3	+0.1252	0.4962	0.2596	+50	−38
h^3 Aquarii	7.0	3.54	18.8	8 30.2	17 28.1	+ 6 1.3	+0.4038	0.4962	0.2599	+65	−24
h^4 Aquarii	8.0	+3.54	+18.8	− 8 15.7	18 11.3	+ 6 43.3	+0.3284	0.4961	+0.2604	+61	−28
96 Aquarii	5.6	3.52	19.7	5 41.9	14 0 50.2	−10 49.0	−0.7153	0.4953	0.2642	+ 8	−90
B. A. C. 8184	6.3	3.48	20.3	5 6.3	6 22.4	− 5 26.1	+0.1120	0.4950	0.2669	+50	−39
20 Piscium	5.5	3.44	21.4	3 20.7	16 25.7	+ 4 20.5	+0.9080	0.4955	0.2704	+87	+ 3
Lalande 47041	7.1	3.40	21.9	− 0 51.7	22 52.9	+10 37.0	−0.0252	0.4961	0.2717	+43	−46
44 Piscium	5.9	+3.36	+22.8	+ 1 21.5	15 12 44.3	+ 0 5.0	+1.3560	0.4985	+0.2720	+85	+38
60 Piscium	6.2	3.31	23.0	6 10.1	16 0 26.7	+11 27.4	−0.6163	0.5023	0.2698	+13	−81
62 Piscium	6.0	3.30	23.0	6 43.7	0 54.7	+11 54.5	−1.0970	0.5023	0.2697	−15	−38
B. A. C. 221	5.9	3.32	23.2	4 44.5	0 55.7	+11 55.6	+1.0310	0.5023	0.2697	+90	+11
B. A. C. 274	6.2	3.30	23.3	5 55.1	6 59.2	− 6 11.5	+1.4010	0.5052	0.2671	+90	+47
70 Piscium	8.0	+3.28	+23.2	+ 7 22.5	8 10.4	− 5 2.4	+0.1634	0.5056	+0.2667	+53	−35
ε Piscium	4.2	3.28	23.2	7 19.6	8 36.8	− 4 36.7	+0.3304	0.5056	0.2664	+63	−26
100 Piscium	6.8	3.23	22.8	12 1.3	17 0 56.0	+11 13.5	−0.3868	0.5145	0.2559	+24	−62
π Piscium	5.7	3.21	22.9	11 36.4	2 4.1	−11 40.6	+0.3441	0.5147	0.2548	+64	−24
B. A. C. 490	7.5	3.21	22.9	11 32.6	2 20.9	−11 24.2	+0.4817	0.5152	0.2546	+73	−17
19 Arietis	5.7	+3.16	+22.0	+14 47.4	19 39.7	+ 5 22.1	+1.3100	0.5269	+0.2363	+84	+41
27 Arietis	6.3	3.14	21.2	17 14.5	18 4 4.4	−10 29.5	+0.6730	0.5332	0.2250	+90	− 2
B. A. C. 782	7.0	3.14	21.0	18 25.1	5 18.8	− 9 17.6	−0.2831	0.5343	0.2231	+30	−51
μ Arietis	6.0	3.15	20.3	17 33.9	9 20.8	− 5 23.7	−0.5964	0.5378	0.2169	+13	−67
47 Arietis	6.0	3.13	19.8	20 14.9	16 27.5	+ 1 28.6	+0.1914	0.5437	0.2050	+55	−24
B. A. C. 920	7.0	+3.13	+19.5	+21 12.0	16 48.8	+ 1 49.2	−0.7293	0.5441	+0.2043	+ 5	−68
ε Arietis	4.3	3.13	19.6	20 55.3	16 58.1	+ 1 58.2	−0.4064	0.5441	0.2040	+23	−55
ζ Arietis	4.7	3.10	19.2	20 39.4	23 55.5	+ 8 41.0	+1.2450	0.5499	0.1909	+88	+42
B. A. C. 1055	6.8	3.08	18.4	21 40.3	19 4 7.0	−11 16.3	+0.9690	0.5535	0.1825	+90	+21
66 Arietis	6.0	3.08	18.4	22 26.6	5 46.4	− 9 40.5	+0.4659	0.5550	0.1789	+74	− 8
7 Tauri	6.0	+3.10	+17.4	+24 6.8	8 18.9	− 7 13.5	−0.8219	0.5573	+0.1734	− 2	−66

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
9 Tauri	7.0	+3.09	+17.7	+22 51.9	**19** 9 24.7	− 6 10.1	+0.6625	0.5582	+0.1709	+90	+ 4
11 Tauri	6.7	3.10	17.4	24 59.5	10 59.4	− 4 38.8	−1.2770	0.5594	0.1673	−42	−65
g Pleiadum	6.3	3.08	17.1	23 57.6	12 42.4	− 2 59.6	+0.0777	0.5611	0.1634	+49	−25
17 Tauri	4.3	3.08	17.2	23 47.1	12 44.3	− 2 57.8	+0.2643	0.5611	0.1634	+60	−16
18 Tauri	6.3	3.09	16.9	+24 30.7	12 51.6	− 2 50.8	−0.4681	0.5611	0.1631	+19	−54
19 Tauri	5.0	+3.09	+17.1	+24 8.3	12 52.4	− 2 50.0	−0.0795	0.5611	+0.1631	+40	−33
20 Tauri	5.0	3.08	16.9	24 2.5	13 8.1	− 2 34.8	+0.0639	0.5615	0.1626	+48	−26
21 Tauri	7.0	3.08	16.9	24 13.7	13 9.9	− 2 33.1	−0.1261	0.5615	0.1624	+38	−35
22 Tauri	7.0	3.08	16.9	24 12.1	13 13.6	− 2 29.5	−0.0881	0.5615	0.1622	+40	−33
23 Tauri	4.7	3.08	17.0	23 37.4	13 21.1	− 2 22.3	+0.5320	0.5615	0.1620	+80	− 2
24 Tauri	8.0	+3.08	+17.0	+23 47.6	13 46.8	− 1 57.5	+0.4249	0.5620	+0.1610	+71	− 8
η Tauri	3.0	3.08	17.0	23 46.9	13 50.1	− 1 54.4	+0.4457	0.5620	0.1610	+73	− 6
B. A. C. 1170	6.3	3.06	17.1	23 6.0	14 12.6	− 1 32.8	+1.2130	0.5622	0.1600	+90	+43
B. A. C. 1171	7.8	3.08	16.8	24 1.5	14 15.5	− 1 30.0	+0.2625	0.5622	0.1597	+60	−15
26 Tauri	7 0	3.07	17.0	23 32.2	14 27.1	− 1 18.8	+0.7979	0.5626	0.1594	+90	+13
27 Tauri	4.0	+3.07	+16.9	+23 44.0	14 32.6	− 1 13.8	+0.6078	0.5627	+0.1594	+87	+ 2
28 Tauri	6.2	3.07	16.9	23 49.0	14 32.4	− 1 13.7	+0.5216	0.5627	0.1592	+79	− 2
B. A. C. 1192	6.0	3.08	16.4	25 22.4	14 59.6	− 0 47.4	−1.0190	0.5630	0.1581	−16	−65
p Tauri	6.0	3.05	15.2	26 12.5	23 26.6	+ 7 20.4	−0.6299	0.5701	0.1372	+ 9	−60
φ Tauri	5.3	3.05	14.5	27 6.1	**20** 3 17.3	+11 2.3	−1.0450	0.5729	0.1271	−19	−63
χ Tauri	5.7	+3.01	+14.9	+25 22.9	4 12.9	+11 55.8	+0.8455	0.5736	+0.1246	+90	+19
W. iv, 1421	6.0	2.91	11.5	27 54.0	22 42.3	+ 5 41.2	+0.0700	0.5861	0.0709	+49	−16
22 Aurigæ	7.0	2.88	10.3	28 50.5	**21** 3 55.5	+10 41.6	−0.5641	0.5887	0.0545	+12	−51
β Tauri	2.0	2.87	10.3	28 31.2	5 2.5	+11 45.9	−0.1772	0.5892	0.0509	+34	−28
B. A. C. 1772	6.3	2.83	9.3	29 9.5	9 58.6	− 7 30.2	−0.6176	0.5916	0.0350	+ 9	−53
136 Tauri	5.3	+2.75	+ 8.9	+27 35.4	15 18.1	− 2 23.9	+1.1240	0.5932	+0.0183	+90	+48
κ Aurigæ	4.7	2.70	6.9	29 32.3	23 32.8	+ 5 30.3	−0.8266	0.5950	−0.0097	− 4	−60
49 Aurigæ	5.7	2.58	6.5	28 6.4	**22** 6 59.5	−11 21.7	+0.4613	0.5953	0.0343	+75	+ 7
53 Aurigæ	6.0	2.59	5.5	29 4.6	8 9.9	−10 14.3	−0.5643	0.5954	0.0385	+12	−49
54 Aurigæ	6.0	2.57	5.7	28 21.5	8 36.9	− 9 48.4	+0.1470	0.5951	0.0399	+53	−10
25 Geminorum	6.5	+2.56	+ 5.6	+28 17.7	9 17.4	− 9 9.6	+0.1824	0.5951	−0.0422	+56	− 8
28 Geminorum	6.0	2.56	5.2	29 4.8	10 33.1	− 7 57.0	−0.6685	0.5951	0.0464	+ 6	−57
W. vi, 1656	8.2	2.43	4.7	26 59.6	17 44.6	− 1 3.5	+1.0240	0.5941	0.0701	+90	+36
47 Geminorum	6.0	2.40	4.2	27 1.9	20 35.6	+ 1 40.4	+0.7711	0.5934	0.0795	+90	+19
53 Geminorum	6.3	2.40	3.6	28 5.0	22 17.8	+ 3 18.4	−0.4308	0.5929	0.0848	+20	−44
59 Geminorum	6.9	+2.36	+ 3.2	+27 50.6	**23** 1 33.3	+ 6 25.7	−0.4825	0.5920	−0.0952	+17	−48
ι Geminorum	4.0	2.36	3.1	28 0.6	2 0.1	+ 6 51.4	−0.6926	0.5920	0.0967	+ 5	−61
b^2 Geminorum	6.3	2.34	2.8	28 8.2	3 32.8	+ 8 20.3	−0.9729	0.5912	0.1015	−14	−62
B. A. C. 2472	8.0	2.33	2.7	28 7.9	3 52.1	+ 8 38.7	−1.0000	0.5912	0.1025	−16	−62
υ Geminorum	4.3	2.29	2.7	27 7.8	5 53.4	+10 35.1	−0.2049	0.5903	0.1086	+33	−34
c Geminorum	6.0	+2.24	+ 2.5	+26 2.2	9 2.3	−10 23.8	+0.5405	0.5891	−0.1183	+82	+ 3
φ Geminorum	5.0	2.21	1.6	27 2.4	12 37.7	− 6 57.1	−0.9139	0.5875	0.1293	− 9	−63
ω^1 Cancri	6.0	2.15	1.6	25 41.0	15 31.3	− 4 10.6	+0.0637	0.5856	0.1378	+48	−23
ω^2 Cancri	6.3	2.14	1.7	25 22.8	15 50.3	− 3 52.3	+0.3252	0.5856	0.1387	+65	−10
ψ^1 Cancri	6.8	2.12	0.9	26 9.3	19 7.4	− 0 43.2	−0.9247	0.5838	0.1481	− 9	−64
ψ^2 Cancri	5.7	+2.11	+ 1.0	+25 49.7	19 13.4	− 0 37.4	−0.6113	0.5838	−0.1485	+11	−60
λ Cancri	5.7	2.04	0.8	24 21.3	23 11.8	+ 3 11.5	+0.2577	0.5815	0.1593	+60	−15
υ^1 Cancri	6.0	2.03	0.3	24 52.9	**24** 1 36.3	+ 5 30.3	−0.6625	0.5802	0.1660	+ 8	−64
υ^2 Cancri	5.8	2.01	0.3	24 29.8	2 23.0	+ 6 15.2	−0.4065	0.5797	0.1678	+22	−50
υ^3 Cancri	6.0	2.00	+ 0.1	24 26.3	3 32.2	+ 7 21.7	−0.5436	0.5789	0.1709	+15	−58
υ^4 Cancri	5.7	+1.99	0.0	+24 26.7	4 7.7	+ 7 55.8	−0.6522	0.5784	−0.1726	+ 9	−64
B. A. C. 3138	6.3	1.76	− 1.5	21 43.2	20 38.8	− 0 11.3	−1.1050	0.5672	0.2117	−20	−68
B. A. C. 3206	6.3	1.69	1.7	20 14.7	**25** 1 18.5	+ 4 17.9	−0.6374	0.5641	0.2216	+10	−68
26 Leonis	7.7	1.54	2.4	15 43.6	15 37.5	− 5 54.3	+0.5222	0.5543	0.2473	+77	−12
34 Leonis	6.3	1.42	2.7	13 52.7	21 31.2	− 0 13.2	+0.8908	0.5504	0.2560	+90	+ 7
37 Leonis	5.7	+1.41	− 3.1	+14 15.3	23 44.7	+ 1 55.3	−0.0601	0.5491	−0.2589	+41	−43

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

SEPTEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0. Δα	Red'ns from 1894.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
l Leonis	5.3	+1.26	- 4.1	+11 6.3	26 14 26.0	- 7 53.3	-0.8350	0.5408	-0.2752	+ 1	-79
σ Leonis	4.1	1.14	5.0	6 36.5	27 5 13.6	+ 6 24.7	-0.4793	0.5335	0.2854	+20	-71
80 Leonis	6.5	1.10	5.0	4 26.5	7 26.0	+ 8 32.7	+1.0660	0.5330	0.2864	+90	+14
Venus				+ 5 46.5	7 36.9	+ 8 43.3	-0.3309	0.4854	0.2669	+28	-62
				NEW	*MOON.*						
α Virginis	1.5	+0.95	- 9.9	-10 36.7	29 16 34.7	- 8 8.4	+0.1509	0.5273	-0.2677	+50	-36
Mercury				11 19.3	30 1 15.1	+ 0 15.3	-1.3930	0.4741	0.2310	-51	-73
86 Virginis	5.9	0.99	10.7	11 53.9	2 27.1	+ 1 24.9	-1.1150	0.5295	0.2565	-21	-90
B. A. C. 4700	5.6	+1.03	-11.8	-15 48.3	14 10.6	-11 14.5	+0.0190	0.5322	-0.2404	+39	-43

OCTOBER.

Name.	Mag.	Δα	Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
B. A. C. 4923	7.3	+1.20	-13.6	-20 56.3	1 11 37.6	+ 9 30.0	+0.6148	0.5388	-0.2039	+66	-12
42 Libræ	5.7	1.44	14.3	23 28.6	2 7 0.6	+ 4 13.4	-0.2628	0.5451	0.1634	+16	-60
B. A. C. 5197	6.0	1.47	14.5	24 23.2	9 27.8	+ 6 35.5	+0.3147	0.5455	0.1579	+45	-27
b Scorpii	5.3	+1.50	-14.7	-25 27.4	11 44.0	+ 8 46.9	+1.1040	0.5464	-0.1528	+65	+23
A Scorpii (2d star)	5.2	1.52	14.6	25 0.8	12 54.7	+ 9 55.2	+0.4525	0.5467	0.1500	+52	-20
B. A. C. 5253	5.8	1.52	14.4	24 13.2	13 3.2	+10 3.3	-0.4170	0.5467	0.1496	+ 7	-71
B. A. C. 5254	5.8	1.52	14.2	23 39.9	13 4.7	+10 4.8	-1.0140	0.5467	0.1496	-27	-90
B. A. C. 5255	6.0	1.52	14.6	25 5.8	13 10.5	+10 10.5	+0.5024	0.5467	0.1493	+55	-17
3 Scorpii	6.7	+1.52	-14.6	-24 55.9	13 22.6	+10 22.4	+0.2959	0.5468	-0.1490	+43	-28
π Scorpii	3.4	1.56	14.8	25 48.7	15 13.0	-11 51.3	+0.9670	0.5473	0.1459	+64	+12
B. A. C. 5314	5.7	1.59	14.7	25 34.3	17 12.6	- 9 55.8	+0.4285	0.5479	0.1398	+50	-21
B. A. C. 5347	6.0	1.62	14.7	26 2.7	19 18.0	- 7 54.9	+0.6489	0.5481	0.1348	+62	- 8
σ Scorpii	3.4	1.70	14.3	25 20.5	3 1 3.6	- 2 21.4	-0.8426	0.5495	0.1209	-19	-90
α Scorpii	1.4	+1.76	-14.3	-26 12.0	4 38.6	+ 1 6.0	-0.3359	0.5503	-0.1119	+ 7	-65
43 Ophiuchi	5.8	2.17	13.3	28 2.6	4 4 3.8	- 0 18.7	-0.2577	0.5525	0.0510	+ 5	-60
3 Sagittarii *var.*	5.0	2.35	12.1	27 47.6	14 34.4	+ 9 49.4	-0.9221	0.5518	0.0230	-33	-90
γ¹ Sagittarii *var.*	6.0	2.51	11.8	29 35.2	22 8.6	- 6 52.6	+0.9445	0.5507	-0.0029	+60	+13
B. A. C. 6127	5.1	2.51	11.2	28 28.3	23 30.0	- 5 34.0	-0.2815	0.5503	+0.0007	- 1	-62
τ Sagittarii	3.6	+2.91	- 7.1	-27 49.6	6 1 34.7	- 4 23.9	-0.0920	0.5426	+0.0675	+15	-50
B. A. C. 6628	5.9	3.03	5.8	28 4.3	9 31.5	+ 3 16.6	+0.7902	0.5392	0.0866	+62	+ 1
B. A. C. 6666	5.8	3.06	5.1	27 12.2	11 59.8	+ 5 39.9	+0.0547	0.5380	0.0925	+25	-41
ω Sagittarii	5.1	3.19	2.7	26 34.8	7 0 1.4	- 6 42.6	+0.6398	0.5323	0.1197	+60	- 9
A Sagittarii	5.3	3.21	- 2.4	26 28.9	1 29.8	- 5 17.2	+0.7119	0.5314	0.1228	+63	- 4
17 Capricorni	6.0	+3.34	+ 3.3	-21 54.0	8 0 15.9	- 7 14.8	-1.0300	0.5199	+0.1681	-25	-90
B. A. C. 7325	6.9	3.40	5.4	20 36.2	10 29.0	+ 2 39.3	-0.6521	0.5147	0.1860	0	-90
χ Capricorni	5.4	3.44	5.3	21 37.1	11 24.1	+ 3 32.8	+0.6389	0.5145.	0.1874	+67	-10
26 Capricorni	7.0	3.41	5.7	20 37.2	11 45.9	+ 3 53.9	-0.3959	0.5141	0.1879	+14	-69
27 Capricorni	6.5	3.42	5.6	20 58.8	11 54.1	+ 4 1.9	+0.0276	0.5141	0.1883	+34	-43
φ Capricorni	5.5	+3.45	+ 6.0	-21 5.4	14 58.4	+ 7 0.6	+0.7336	0.5126	+0.1932	+68	- 5
γ Capricorni	3.7	3.44	9.6	17 8.2	9 3 32.3	- 4 48.1	-1.0760	0.5072	0.2120	-22	-90
B. A. C. 7558	8.0	3.44	10.1	16 27.1	5 44.8	- 2 39.6	-1.3590	0.5063	0.2150	-52	-90
δ Capricorni	2.8	3.45	10.3	16 36.3	7 8.8	- 1 18.0	-0.8859	0.5058	0.2170	- 9	-90
ι Aquarii	4.4	3.49	12.3	14 22.8	17 21.6	+ 8 37.0	-1.0480	0.5021	0.2298	-18	-90
39 Aquarii	6.4	+3.50	+12.9	-14 42.7	20 31.8	+11 41.7	+0.0530	0.5010	+0.2331	+42	-42
42 Aquarii	5.8	3.48	13.5	13 21.4	22 51.8	-10 2.3	-0.8859	0.5005	0.2360	- 7	-90
45 Aquarii	6.3	3.50	13.7	13 49.9	10 0 2.1	- 8 54.1	-0.0895	0.5001	0.2374	+35	-49
50 Aquarii	6.1	3.53	13.9	14 3.8	2 56.2	- 6 5.0	+0.8594	0.4994	0.2405	+76	+ 1
54 Aquarii	7.0	3.48	14.7	11 45.8	4 9.6	- 4 53.7	-1.3640	0.4992	0.2416	-46	-90
B. A. C. 7835	6.5	+3.53	+14.5	-13 27.3	5 55.1	- 3 11.2	+0.9149	0.4987	+0.2433	+77	+ 4
58 Aquarii	6.7	3.49	15.1	11 26.7	6 50.1	- 2 17.8	-1.0620	0.4983	0.2443	-17	-90
64 Aquarii	6.9	3.49	16.1	10 34.4	10 55.5	+ 1 40.7	-1.0070	0.4978	0.2480	-12	-90
65 Aquarii	7.0	3.51	16.3	10 39.2	12 56.7	+ 3 38.5	-0.4147	0.4973	0.2499	+21	-68
70 Aquarii	6.2	3.53	16.6	11 6.6	15 53.9	+ 6 29.7	+0.8266	0.4967	0.2525	+79	- 1
Lalande 44734	6.8	+3.53	+17.0	-10 37.0	18 10.8	+ 8 43.7	+0.8678	0.4966	+0.2543	+79	+ 1

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0. Δα	Red'ns from 1894.0. Δδ	Apparent Declination	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
81 Aquarii	6.6	+3.50	+18.2	- 7 37.5	**10** 22 54.3	-10 40.7	-1.1800	0.4961	+0.2578	-23	-90
h^1 Aquarii	5.4	3.52	18.3	8 15.6	**11** 0 56.4	- 8 41.9	+0.0380	0.4957	0.2593	+45	-42
h^2 Aquarii	7.4	3.52	18.3	8 19.3	1 1.5	- 8 37.0	+0.1268	0.4957	0.2593	+49	-38
h^3 Aquarii	7.0	3.53	18.3	8 30.2	1 19.9	- 8 19.2	+0.4037	0.4957	0.2596	+65	-24
h^4 Aquarii	8.0	3.53	18.4	8 15.7	2 3.0	- 7 37.3	+0.3275	0.4957	0.2601	+61	-28
96 Aquarii	5.6	+3.51	+19.7	- 5 41.9	8 40.9	- 1 10.5	-0.7221	0.4955	+0.2641	+ 7	-90
B. A. C. 8184	6.3	3.53	20.3	5 6.2	14 11.8	+ 4 15.0	+0.1081	0.4956	0.2670	+50	-39
20 Piscium	5.5	3.54	21.7	3 20.7	**12** 0 11.9	-10 5.6	+0.9005	0.4966	0.2709	+87	+ 2
Lalande 47041	7.1	3.53	22.6	- 0 51.7	6 36.3	- 3 52.0	-0.0286	0.4977	0.2725	+43	-46
44 Piscium	5.9	3.55	23.8	+ 1 21.5	20 19.7	+ 9 28.0	+1.3400	0.5013	0.2734	+36	-87
60 Piscium	6.2	+3.54	+24.9	+ 6 10.1	**13** 7 53.5	- 3 18.1	-0.6319	0.5059	+0.2713	+12	-82
62 Piscium	6.0	3.54	24.9	6 43.7	8 21.1	- 2 51.3	-1.1010	0.5063	0.2713	-15	-83
B. A. C. 221	5.9	3.55	24.8	4 44.5	8 22.1	- 2 50.3	+1.0140	0.5063	0.2713	+90	+10
B. A. C. 274	6.2	3.56	25.1	5 55.1	14 20.5	+ 2 57.6	+1.3770	0.5090	0.2689	+90	+43
70 Piscium	8.0	3.56	25.2	7 22.5	15 30.6	+ 4 5.5	+0.1482	0.5098	0.2685	+53	-35
ε Piscium	4.2	+3.56	+25.2	+ 7 19.6	15 56.5	+ 4 30.7	+0.3157	0.5098	+0.2683	+62	-27
100 Piscium	6.8	3.59	25.4	12 1.3	**14** 7 59.8	- 3 55.2	-0.4013	0.5195	0.2581	+24	-63
π Piscium	5.7	3.60	25.3	11 36.4	9 6.6	- 2 50.5	+0.3205	0.5202	0.2572	+62	-25
B. A. C. 490	7.5	3.60	25.3	11 32.6	9 23.2	- 2 34.4	+0.4571	0.5206	0.2569	+72	-18
19 Arietis	5.7	3.65	24.7	14 47.4	**15** 2 22.4	-10 7.6	+1.2720	0.5328	0.2388	+89	-37
27 Arietis	6.3	+3.68	+24.1	+17 14.5	10 37.4	- 2 9.0	+0.6398	0.5400	+0.2274	+88	- 4
B. A. C. 782	7.0	3.69	23.9	18 25.1	11 50.2	- 0 58.7	-0.3085	0.5409	0.2255	+28	-52
μ Arietis	6.0	3.72	23.4	19 34.0	15 47.5	+ 2 50.6	-0.6230	0.5442	0.2192	+11	-58
47 Arietis	6.0	3.73	22.7	20 15.0	22 46.0	+ 9 34.6	+0.1554	0.5501	0.2070	+53	-26
B. A. C. 920	7.0	3.74	22.5	21 12.1	23 6.8	+ 9 54.7	-0.7578	0.5503	0.2063	+ 3	-66
ε Arietis	4.3	+3.74	+22.6	+20 55.4	23 15.8	+11 3.4	-0.4385	0.5504	+0.2062	+21	-57
ζ Arietis	4.7	3.74	21.9	20 39.5	**16** 6 5.3	- 7 21.7	+1.1960	0.5565	0.1928	+90	+37
B. A. C. 1055	6.8	3.76	21.2	21 40.4	10 12.1	- 3 23.8	+0.9187	0.5601	0.1841	+90	+17
66 Arietis	6.0	3.77	20.9	22 26.6	11 49.8	- 1 49.7	+0.4231	0.5614	0.1804	+71	-10
7 Tauri	6.0	3.80	20.3	24 6.8	14 19.6	+ 0 34.6	-0.8559	0.5635	0.1750	- 3	-66
9 Tauri	7.0	+3.77	+20.2	+22 51.9	15 24.1	+ 2 36.7	+0.6184	0.5645	+0.1725	+88	+ 2
g Pleiadum	6.3	3.79	19.7	23 57.6	18 38.4	+ 4 43.8	+0.0360	0.5671	0.1647	+47	-27
17 Tauri	4.3	3.79	19.7	23 47.1	18 40.4	+ 4 45.7	+0.2231	0.5671	0.1647	+58	-18
18 Tauri	6.3	3.80	19.5	24 30.7	18 47.4	+ 4 52.4	-0.5079	0.5674	0.1644	+17	-56
19 Tauri	5.0	3.79	19.6	24 8.3	18 48.3	+ 4 53.3	-0.1218	0.5674	0.1644	+38	-35
20 Tauri	5.0	+3.79	+19.6	+24 2.5	19 3.7	+ 5 8.1	+0.0206	0.5676	+0.1639	+46	-28
21 Tauri	7.0	3.79	19.6	24 13.7	19 5.5	+ 5 9.8	-0.1664	0.5676	0.1637	+35	-37
22 Tauri	7.0	3.79	19.5	24 12.1	19 9.1	+ 5 13.3	-0.1304	0.5676	0.1637	+37	-36
23 Tauri	4.7	3.79	19.6	23 37.4	19 16.5	+ 5 20.5	+0.4855	0.5676	0.1633	+76	- 4
24 Tauri	8.0	3.79	19.6	23 47.6	19 41.7	+ 5 44.6	+0.3791	0.5680	0.1623	+68	-10
η Tauri	3.0	+3.79	+19.6	+23 46.9	19 44.8	+ 5 47.6	+0.3997	0.5683	+0.1621	+69	- 9
B. A. C. 1170	6.3	3.77	19.6	23 6.0	20 7.0	+ 6 9.0	+1.1610	0.5683	0.1619	+90	+38
B. A. C. 1171	7.8	3.79	19.4	24 1.5	20 9.9	+ 6 11.8	+0.2160	0.5684	0.1611	+57	-18
26 Tauri	7.0	3.78	19.5	23 32.2	20 21.3	+ 6 22.8	+0.7496	0.5685	0.1607	+90	+10
27 Tauri	4.0	3.79	19.4	23 44.0	20 26.5	+ 6 27.8	+0.5626	0.5689	0.1605	+83	0
28 Tauri	6.2	+3.79	+19.4	+23 49.0	20 27.0	+ 6 28.3	+0.4768	0.5689	+0.1604	+75	- 7
B. A C. 1192	6.0	3.82	19.1	25 22.4	20 53.3	+ 6 53.6	-1.0540	0.5690	0.1593	-18	-65
p Tauri	6.0	3.81	17.6	26 12.5	**17** 5 12.3	- 9 6.5	-0.6708	0.5755	0.1381	+ 7	-63
φ Tauri	5.3	3.83	16.8	27 6.1	8 59.6	- 5 28.0	-1.0840	0.5784	0.1279	-22	-63
χ Tauri	5.7	3.79	17.0	25 23.0	9 54.4	- 4 35.4	+0.7930	0.5790	0.1253	+90	+16
W. iv, 1421	6.0	+3.78	+12.8	+27 54.0	**18** 4 11.2	-11 2.5	+0.0170	0.5896	+0.0708	+46	-19
22 Aurigæ	7.0	3.78	11.4	28 50.5	9 22.0	- 6 4.5	-0.6190	0.5919	0.0544	+ 9	-55
β Tauri	2.0	3.77	11.2	28 31.2	10 28.6	- 5 0.6	-0.2313	0.5923	0.0508	+31	-31
B. A. C. 1772	6.3	3.75	10.0	29 9.5	15 23.0	- 0 18.4	-0.6711	0.5937	0.0348	+ 6	-57
136 Tauri	5.3	3.66	9.1	27 35.4	20 41.4	+ 4 46.8	+1.0640	0.5946	+0.0176	+90	+31
κ Aurigæ	4.7	+3.65	+ 7.7	+29 32.3	**19** 4 55.5	-11 19.5	-0.8865	0.5953	-0.0100	- 7	-60

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

OCTOBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
49 Aurigæ	5.7	+3.53	+ 5.5	+28 6.4	**19** 12 23.2	− 4 10.7	+0.4014	0.5947	−0.0347	+70	+ 4
53 Aurigæ	6.0	3.55	5.4	29 4.6	13 33.8	− 3 3.0	−0.6266	0.5946	0.0386	+ 9	−54
54 Aurigæ	6.0	3.52	5.0	28 21.5	14 1.0	− 2 37.0	+0.0864	0.5944	0.0401	+50	−13
25 Geminorum	6.5	3.51	4.8	28 17.7	14 41.6	− 1 58.1	+0.1219	0.5943	0.0423	+52	−11
28 Geminorum	6.0	3.52	4.8	29 4.8	15 57.7	− 0 45.1	−0.7328	0.5940	0.0466	+ 2	−61
W. vi, 1656	8.2	+3.38	+ 2.5	+26 59.5	23 12.0	+ 6 11.2	+0.9658	0.5921	−0.0700	+90	+32
47 Geminorum	6.0	3.34	2.0	27 1.8	**20** 2 4.4	+ 8 56.5	+0.7119	0.5912	0.0791	+90	+16
53 Geminorum	6.3	3.35	2.0	28 4.9	3 47.5	+10 35.4	−0.4937	0.5903	0.0845	+17	−48
59 Geminorum	6.9	3.30	1.3	27 50.5	7 5.1	−10 15.1	−0.5461	0.5888	0.0948	+14	−53
ι Geminorum	4.0	3.29	1.3	28 0.5	7 32.3	− 9 49.0	−0.7590	0.5886	0.0962	+ 1	−62
b^2 Geminorum	6.3	+3.28	+ 1.1	+28 8.1	9 6.0	− 8 19.1	−1.0410	0.5880	−0.1010	−19	−62
B. A. C. 2472	8.0	3.28	1.0	28 7.8	9 25.5	− 8 0.5	−1.0690	0.5878	0.1019	−22	−62
υ Geminorum	4.3	3.23	0.5	27 7.8	11 28.3	− 6 2.6	−0.2704	0.5861	0.1081	+29	−37
c Geminorum	6.0	3.15	+ 0.1	26 2.2	14 39.8	− 2 58.8	+0.4780	0.5852	0.1178	+76	0
φ Geminorum	5.0	3.13	− 1.0	27 2.4	18 18.2	+ 0 30.8	−0.9879	0.5829	0.1299	−14	−63
ω^1 Cancri	6.0	+3.05	− 1.2	+25 41.0	21 14.6	+ 3 30.2	−0.0017	0.5812	−0.1367	+44	−26
ω^2 Cancri	6.3	3.04	1.1	25 22.8	21 33.9	+ 3 42.6	+0.2617	0.5811	0.1375	+60	−13
ψ^1 Cancri	6.8	3.02	2.1	26 9.3	**21** 0 54.5	+ 6 51.3	−0.9995	0.5788	0.1468	−15	−64
ψ^2 Cancri	5.7	3.01	2.0	25 49.7	1 0.6	+ 6 57.2	−0.6837	0.5788	0.1471	+ 6	−64
λ Cancri	5.7	2.92	2.3	24 21.3	5 3.3	+10 50.4	+0.1925	0.5758	0.1579	+56	−18
υ^1 Cancri	6.0	+2.90	− 3.0	+24 52.9	7 30.7	−10 48.0	−0.7358	0.5741	−0.1641	+ 3	−65
υ^2 Cancri	5.8	2.88	3.1	24 29.8	8 18.3	−10 2.1	−0.4794	0.5738	0.1661	+18	−55
υ^3 Cancri	6.0	2.86	3.2	24 26.2	9 28.8	− 8 54.3	−0.6128	0.5728	0.1691	+11	−62
υ^4 Cancri	5.7	2.86	3.3	24 26.6	10 5.1	− 8 19.4	−0.7224	0.5724	0.1706	+ 4	−66
B. A. C. 3138	6.3	2.55	5.4	21 43.1	**22** 2 59.0	+ 7 56.4	−1.1810	0.5598	0.2086	−27	−68
B. A. C. 3206	6.3	+2.46	− 5.7	+20 14.6	7 45.8	−11 27.2	−0.7073	0.5564	−0.2182	+ 6	−70
26 Leonis	7.7	2.18	6.5	15 43.5	22 28.4	+ 2 44.2	+0.4677	0.5459	0.2430	+73	−14
34 Leonis	6.3	2.08	6.7	13 42.6	**23** 4 32.1	+ 8 35.3	+0.8433	0.5420	0.2511	+90	+ 5
37 Leonis	5.7	2.06	7.2	14 15.3	6 49.5	+10 48.0	−0.1199	0.5406	0.2545	+38	−46
l Leonis	5.3	1.84	8.1	11 6.3	21 56.2	+ 1 24.5	−0.9007	0.5323	0.2705	− 3	−79
χ Leonis	4.8	+1.73	− 8.0	+ 7 54.4	**24** 5 25.9	+ 8 39.6	+0.2993	0.5281	−0.2757	+61	−28
σ Leonis	4.1	1.64	8.6	6 36.5	13 8.6	− 7 52.6	−0.5260	0.5260	0.2806	+18	−74
80 Leonis	6.5	1.59	8.3	4 26.5	15 24.8	−10 40.8	+1.0420	0.5258	0.2816	+90	+12
89 Leonis	6.2	1.55	8.6	3 38.8	19 33.0	− 1 40.4	+0.6829	0.5246	0.2832	+90	− 9
β Virginis	3.7	1.46	9.0	+ 2 21.5	**25** 3 26.5	+ 5 58.2	−0.2451	0.5228	0.2849	+32	−58
B. A. C. 4394	6.1	+1.19	−10.3	− 8 25.2	**26** 17 36.8	− 5 3.1	+0.0688	0.5236	−0.2726	+46	−41
56 Virginis	7.0	1.17	10.4	9 48.7	20 37.6	− 2 8.0	+0.6874	0.5241	0.2704	+80	− 9
58 Virginis	7.0	1.16	10.4	9 59.5	21 55.5	− 0 52.6	+0.5240	0.5243	0.2691	+72	−18
62 Virginis	7.0	1.16	10.5	10 44.4	23 19.1	+ 0 28.3	+0.9243	0.5248	0.2676	+79	+ 5
α Virginis	1.5	1.16	10.6	10 36.7	**27** 1 40.1	+ 2 45.0	+0.1657	0.5252	0.2657	+51	−36
				NEW	*MOON.*						
42 Libræ	5.7	+1.33	−12.7	−23 28.6	**29** 16 9.5	− 8 49.7	−0.1898	0.5486	−0.1637	+20	−56
B. A. C. 5197	6.0	1.34	12.7	24 23.2	18 35.6	− 6 28.7	+0.3871	0.5496	0.1581	+49	−23
b Scorpii	5.3	1.37	12.6	25 27.4	20 50.8	− 4 18.3	+1.1770	0.5500	0.1529	+65	+30
A Scorpii (2d star)	5.2	+1.38	−13.2	−25 0.8	22 0.8	− 3 10.7	+0.5281	0.5504	−0.1501	+56	−15
B. A. C. 5253	5.8	1.38	13.1	24 13.2	22 9.3	− 3 2.6	−0.3397	0.5506	0.1497	+11	−65
B. A. C. 5254	5.8	1.38	13.0	23 39.9	22 10.7	− 3 1.2	−0.9354	0.5506	0.1497	−22	−90
B. A. C. 5255	6.0	1.38	13.2	25 5.8	22 16.5	− 2 55.5	+0.5775	0.5507	0.1496	+59	−13
3 Scorpii	6.7	1.38	13.2	24 55.9	22 28.5	− 2 44.0	+0.3753	0.5507	0.1490	+48	−23
B. A. C. 5347	6.0	+1.44	−13.2	−26 2.7	**30** 4 20.1	+ 2 55.1	+0.7311	0.5526	−0.1350	+64	− 3
σ Scorpii	3.4	1.50	13.0	25 20.5	10 3.0	+ 8 26.0	−0.7546	0.5540	0.1209	−14	−90
α Scorpii	1.4	1.54	13.0	26 12.0	13 35.8	+11 51.1	−0.2453	0.5546	0.1119	+12	−59
B. A. C. 5800	7.5	1.78	12.2	26 51.6	**31** 8 52.5	+ 6 26.3	−1.2130	0.5571	0.0611	−53	−83
43 Ophiuchi	5.8	1.84	12.2	28 2.6	12 45.7	+10 11.0	−0.1501	0.5569	0.0506	+11	−53
3 Sagittarii *var.*	5.0	+1.98	−11.2	−27 47.6	23 9.6	− 3 47.6	−0.8041	0.5562	−0.0225	−26	−90

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
γ^1 Sagittarii *var.*	6.0	+2.11	−10.9	−29 35.2	**1** 6 38.8	+ 3 25.6	+1.0580	0.5547	−0.0024	+60	+22
B. A. C. 6127	5.1	2.11	10.5	28 28.3	7 59.7	+ 4 43.5	−0.1602	0.5546	+0.0013	+ 6	−54
τ Sagittarii	3.6	2.47	7.1	27 49.6	**2** 9 51.8	+ 5 40.9	+0.0422	0.5450	0.0683	+22	−42
B. A. C. 6628	5.9	2.58	6.0	28 4.3	17 46.1	−10 41.1	+0.9281	0.5411	0.0874	+62	+11
B. A. C. 6666	5.8	2.59	5.3	27 12.2	20 14.0	− 8 18.2	+0.1931	0.5396	0.0930	+33	−34
ω Sagittarii	5.1	+2.74	− 3.4	−26 34.9	**3** 8 13.7	+ 3 17.6	+0.7866	0.5332	+0.1199	+63	0
A Sagittarii	5.3	2.76	− 3.2	26 29.0	9 42.0	+ 4 42.9	+0.8531	0.5322	0.1233	+64	+ 5
17 Capricorni	6.0	2.91	+ 1.9	21 54.0	**4** 8 29.9	+ 2 47.0	−0.8796	0.5188	0.1678	−16	−90
η Capricorni	5 1	. 2.98	3.8	20 16.3	17 36.4	+11 36.6	−1.0820	0.5136	0.1832	−27	−90
B. A. C. 7325	6.9	2.99	3.9	20 36.2	18 45.8	−11 16.1	−0.5014	0.5131	0.1851	+ 8	−76
χ Capricorni	5.4	+3.01	+ 3.8	−21 37.1	19 41.2	−10 22.4	+0.7925	0.5125	+0.1867	+68	− 1
26 Capricorni	7.0	2.99	4.2	20 37.2	20 3.3	−10 0.9	−0.2433	0.5124	0.1873	+21	−59
27 Capricorni	6.5	3.00	4.1	20 58.8	20 11.5	− 9 53.0	+0.1806	0.5122	0.1875	+43	−35
ϕ Capricorni	5.5	3.00	4.5	21 5.4	23 17.0	− 6 53.1	+0.8900	0.5107	0.1924	+69	+ 5
γ Capricorni	3.7	3.08	7.9	17 8.3	**5** 11 56.3	+ 5 23.8	−0.9212	0.5054	0.2110	−12	−90
B. A. C. 7558	8.0	+3.08	+ 8.5	−16 27.2	14 9.9	+ 7 33.4	−1.2090	0.5046	+0.2139	−32	−90
ι Aquarii	4.4	3.16	10.5	14 22.8	**6** 1 53.0	− 5 3.8	−0.9005	0.4991	0.2280	− 8	−90
39 Aquarii	6.4	3.18	11.1	14 42.7	5 5.0	− 1 57.3	+0.1997	0.4978	0.2315	+50	−34
45 Aquarii	6.3	3.19	11.9	13 49.9	8 37.4	+ 1 29.1	+0.0600	0.4969	0.2353	+43	−41
50 Aquarii	6.1	3.22	12.2	14 3.8	11 33.0	+ 4 19.7	+1.0040	0.4960	0.2382	+76	+10
54 Aquarii	7.0	+3.19	+13.1	−11 45.8	12 47.4	+ 5 32.0	−1.2230	0.4957	+0.2395	−30	−90
B. A. C. 7835	6.5	3.23	12.8	13 27.3	14 33.8	+ 7 15.4	+1.0650	0.4953	0.2396	+77	+15
σ Aquarii	5.1	3.19	13.5	11 13.0	14 56.0	+ 7 37.1	−1.2990	0.4951	0.2415	−37	−90
58 Aquarii	6.7	3.20	13.5	11 26.7	15 29.5	+ 8 9.5	−0.9179	0.4951	0.2421	− 7	−90
64 Aquarii	6.9	3.21	14.5	10 34.5	19 37.3	−11 49.6	−0.8648	0.4942	0.2438	− 4	−90
65 Aquarii	7.0	+3.22	+14.7	−10 39.3	21 39.7	− 9 50.5	−0.2716	0.4939	+0.2476	+28	−59
70 Aquarii	6.2	3.26	14.9	11 6.7	**7** 0 38.8	− 6 56.5	+0.9670	0.4933	0.2499	+79	+ 8
Lalande 44734	6.8	3.27	15.4	10 37.0	2 57.1	− 4 42.1	+1.0040	0.4930	0.2519	+79	+10
81 Aquarii	6.6	3.25	16.7	7 37.5	7 43.4	− 0 3.7	−1.0480	0.4923	0.2554	−14	−90
h^1 Aquarii	5.4	3.28	16.9	8 15.6	9 46.6	+ 1 56.1	+0.1706	0.4923	0.2568	+52	−36
h^2 Aquarii	7 4	+3.28	+16.8	− 8 19.3	9 51.9	+ 2 1.2	+0.2595	0.4923	+0.2568	+57	−31
h^3 Aquarii	7.0	3.29	16.8	8 30.2	10 10.4	+ 2 19.2	+0.5370	0.4923	0.2569	+74	−17
h^4 Aquarii	8.0	3.29	16.6	8 15.7	10 53.9	+ 3 1.5	+0.4590	0.4923	0.2574	+69	−21
96 Aquarii	5.6	3.30	18.4	5 41.9	17 35.3	+ 9 31.8	−0.5898	0.4923	0.2616	+13	−81
B. A. C. 8184	6.3	3.34	19.1	5 6.3	23 9.1	− 9 3.7	+0.2310	0.4923	0.2643	+56	−32
20 Piscium	5.5	+3.38	+20.7	− 3 20.7	**8** 9 13.5	+ 0 44.0	+1.0110	0.4940	+0.2683	+87	+ 9
Lalande 47041	7.1	3.40	21.8	− 0 51.7	15 40.2	+ 7 0.0	+0.0734	0.4955	0.2701	+49	−40
44 Piscium	5.9	3.48	23.2	+ 1 21.5	**9** 5 26.6	− 3 37.1	+1.4240	0.5001	0.2713	+73	+50
60 Piscium	6.2	3.54	24.9	6 10.1	17 0.9	+ 7 37.2	−0.5618	0.5056	0.2696	+16	−77
62 Piscium	6.0	3.54	25.1	6 43.7	17 28.4	+ 8 3.9	−1.0300	0.5058	0.2696	−10	−83
B. A. C. 221	5.9	+3.55	+24.7	+ 4 44.5	17 29.4	+ 8 4.9	+1.0790	0.5058	+0.2696	+90	+15
70 Piscium	8.0	3.59	25.4	7 22.5	**10** 0 36.8	− 9 0.3	+0.2041	0.5101	0.2671	+56	−32
ε Piscium	4.2	3.59	25.4	7 19.6	1 2.7	− 8 35.1	+0.3711	0.5101	0.2670	+65	−24
π Piscium	5.7	3.73	26.2	11 36.4	18 6.5	+ 7 57.4	+0.3468	0.5223	0.2565	+64	−23
B. A. C. 490	7.5	3.74	26.1	11 32.7	18 22.9	+ 8 13.3	+0.4809	0.5225	0.2564	+73	−17
27 Arietis	6.3	+3.97	+25.6	+17 14.5	**11** 19 17.8	+ 8 19.3	+0.6193	0.5446	+0.2276	+86	− 5
B. A. C. 782	7.0	3.99	25.6	18 25.1	20 29.5	+ 9 28.5	−0.3232	0.5458	0.2257	+27	−53
μ Arietis	6.0	4.04	25.2	19 34.0	**12** 0 22.6	−10 46.4	−0.6401	0.5495	0.2197	+10	−69
47 Arietis	6.0	4.11	24.5	20 15.0	7 13.2	− 4 11.3	+0.1198	0.5563	0.2075	+51	−28
B. A. C. 920	7.0	4.12	24.4	21 12.1	7 33.6	− 3 50.7	−0.7868	0.5569	0.2069	+ 1	−69
ε Arietis	4.3	+4.11	+24.4	+20 55.4	7 42.5	− 3 42.0	−0.4722	0.5571	+0.2066	+19	−59
ζ Arietis	4.7	4.16	23.6	20 39.5	14 23.5	+ 2 44.4	+1.1400	0.5633	0.1934	+90	+32
B. A. C. 1055	6.8	4.22	23.1	21 40.4	18 24.9	+ 6 36.8	+0.8598	0.5674	0.1848	+90	+14
66 Arietis	6.0	4.23	22.9	22 26.7	20 0.3	+ 8 8.7	+0 3624	0.5687	0.1812	+66	−12
7 Tauri	6.0	4.28	22.5	24 6.9	22 26.6	+10 29.4	−0.9061	0.5711	0.1756	− 7	−66
9 Tauri	7.0	+4.29	+22.1	+22 52.0	23 29.8	+11 30.3	+0.5505	0.5719	+0.1732	+81	− 2

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	″	° ′	d h m	h m				°	°
g Pleiadum	6.3	+4.33	+21.6	+23 57.7	13 2 39.4	- 9 27.5	-0.0306	0.5750	+0.1655	+43	-30
17 Tauri	4.3	4.33	21.6	23 47.2	2 41.3	- 9 25.7	+0.1528	0.5750	0.1655	+53	-21
18 Tauri	6.3	4.34	21.5	24 30.8	2 48.2	- 9 19.0	-0.5685	0.5751	0.1651	+13	-59
19 Tauri	5.0	4.33	21.5	24 8.4	2 49.0	- 9 18.2	-0.1866	0.5751	0.1651	+34	-38
20 Tauri	5.0	4.33	21.5	24 2.6	3 4.1	- 9 3.7	-0.0458	0.5751	0.1644	+42	-31
21 Tauri	7.0	+4.34	+21.5	+24 13.8	3 5.8	- 9 2.1	-0.2308	0.5751	+0.1644	+32	-41
22 Tauri	7.0	4.34	21.5	24 12.2	3 9.3	- 8 58.7	-0.1951	0.5754	0.1643	+34	-39
23 Tauri	4.7	4.33	21.5	23 37.5	3 16.6	- 8 51.7	+0.4140	0.5755	0.1643	+70	-17
24 Tauri	8.0	4.33	21.4	23 47.7	3 41.2	- 8 28.0	+0.3087	0.5757	0.1630	+63	-13
η Tauri	3.0	4.33	21.4	23 47.0	3 44.8	- 8 24.6	+0.3309	0.5761	0.1628	+64	-12
B. A. C. 1170	6.3	+4.32	+21.3	+23 6.1	4 5.9	- 8 4.3	+1.0810	0.5762	+0.1618	+90	+31
B. A. C. 1171	7.8	4.34	21.3	24 1.6	4 8.7	- 8 1.6	+0.1510	0.5765	0.1618	+53	-21
26 Tauri	7.0	4.33	21.3	23 32.3	4 19.9	- 7 50.8	+0.6751	0.5766	0.1613	+90	+ 6
27 Tauri	4.0	4.33	21.3	23 44.1	4 24.8	- 7 46.2	+0.4868	0.5768	0.1612	+76	- 4
28 Tauri	6.2	4.34	21.3	23 49.1	4 25.4	- 7 45.6	+0.4037	0.5768	0.1612	+70	- 8
B. A. C. 1192	6.0	+4.37	+21.1	+25 22.5	4 50.9	- 7 21.0	-1.1090	0.5771	+0.1599	+23	-65
p Tauri	6.0	4.44	19.5	26 12.5	12 57.6	+ 0 26.5	-0.7442	0.5841	0.1386	+ 2	-62
φ Tauri	5.3	4.47	18.6	27 6.1	16 39.0	+ 3 59.1	-1.1550	0.5873	0.1282	-29	-63
χ Tauri	5.7	4.43	18.6	25 23.0	17 32.4	+ 4 50.4	+0.6977	0.5882	0.1254	+90	+11
W. iv, 1421	6.0	4.53	13.9	27 54.0	14 11 20.3	- 2 5.8	-0.0925	0.5989	0.0706	+39	-26
22 Aurigæ	7.0	+4.56	+12.4	+28 50.5	16 22.9	+ 2 44.0	-0.7290	0.6012	+0.0539	+ 2	-61
β Tauri	2.0	4.55	12.2	28 31.2	17 27.7	+ 3 46.1	-0.3476	0.6016	0.0502	+24	-36
B. A. C. 1772	6.3	4.56	10.6	29 9.5	22 14.3	+ 8 20.5	-0.7870	0.6029	0.0339	- 2	-61
136 Tauri	5.3	4.50	9.4	27 35.4	15 3 24.5	-10 42.5	+0.9223	0.6039	+0.0164	+90	+34
κ Aurigæ	4.7	4.53	6.6	29 32.3	11 26.2	- 3 1.4	-1.0170	0.6040	-0.0112	-19	-60
49 Aurigæ	5.7	+4.43	+ 4.8	+28 6.4	18 43.2	+ 3 56.9	+0.2475	0.6030	-0.0364	+59	- 4
53 Aurigæ	6.0	4.46	4.1	29 4.6	19 52.3	+ 5 3.0	-0.7705	0.6029	0.0402	0	-61
54 Aurigæ	6.0	4.43	4.1	28 21.5	20 18.8	+ 5 28.3	-0.0670	0.6026	0.0417	+40	-21
25 Geminorum	6.5	4.43	4.0	28 17.7	20 58.4	+ 5 56.2	-0.0318	0.6026	0.0439	+42	-19
28 Geminorum	6.0	4.44	3.4	29 4.7	22 12.8	+ 7 17.5	-0.8760	0.6024	0.0484	- 8	-61
W. vi, 1656	8.2	+4.30	+ 1.9	+26 59.5	16 5 17.8	- 9 55.5	+0.7956	0.5995	-0.0719	+90	+22
47 Geminorum	6.0	4.28	1.0	27 1.8	8 6.8	- 7 13.7	+0.5428	0.5982	0.0811	+82	+ 7
53 Geminorum	6.3	4.29	+ 0.3	28 4.9	9 47.8	- 5 36.9	-0.6564	0.5974	0.0864	+ 7	-59
59 Geminorum	6.9	4.25	- 0.6	27 50.5	13 1.7	- 2 31.2	-0.7103	0.5957	0.0966	+ 4	-62
ι Geminorum	4.0	4.26	0.7	28 0.5	13 28.3	- 2 5.6	-0.9196	0.5953	0.0982	-10	-62
b^2 Geminorum	6.3	+4.24	- 1.2	+28 8.1	15 0.3	- 0 37.4	-1.2030	0.5943	-0.1028	-36	-62
B. A. C. 2472	8.0	4.24	1.3	28 7.8	15 19.6	- 0 19.0	-1.2310	0.5941	0.1039	-40	-62
υ Geminorum	4.3	4.18	1.6	27 7.8	17 20.6	+ 1 37.0	-0.4424	0.5928	0.1116	+20	-48
c Geminorum	6.0	4.10	2.3	26 2.2	20 28.5	+ 4 37.3	+0.2984	0.5907	0.1195	+63	- 9
φ Geminorum	5.0	4.10	3.6	27 2.4	17 0 3.5	+ 8 3.5	-1.1580	0.5882	0.1301	-30	-63
ω^1 Cancri	6.0	+4.02	- 3.9	+25 40.9	2 57.4	+10 50.4	-0.1811	0.5861	-0.1383	+34	-36
ω^2 Cancri	6.3	4.00	3.9	25 22.7	3 16.6	+11 8.8	+0.0805	0.5859	0.1392	+49	-22
ψ^2 Cancri	5.7	3.98	5.0	25 49.6	6 40.4	- 9 35.6	-0.8606	0.5834	0.1486	- 5	-64
λ Cancri	5.7	3.88	5.6	24 21.2	10 40.3	- 5 45.1	+0.0050	0.5798	0.1594	+45	-28
υ^1 Cancri	6.0	3.86	6.3	24 52.8	13 6.1	- 3 25.1	-0.9198	0.5777	0.1657	- 8	-66
υ^2 Cancri	5.8	+3.84	- 6.4	+24 29.7	13 53.3	- 2 39.7	-0.6615	0.5772	-0.1676	+ 8	-65
υ^3 Cancri	6.0	3.82	6.7	24 26.2	15 3.1	- 1 32.6	-0.8011	0.5763	0.1706	- 1	-66
υ^4 Cancri	5.7	3.82	6.8	24 26.6	15 39.0	- 0 58.1	-0.9103	0.5755	0.1720	- 8	-66
B. A. C. 3206	6.3	3.38	10.3	20 14.5	18 13 13.3	- 4 12.4	-0.9067	0.5565	0.2185	- 6	-70
26 Leonis	7.7	3.06	11.4	15 43.4	19 3 57.4	+10 0.4	+0.2672	0.5445	0.2422	+59	-25
34 Leonis	6.3	+2.94	-11.8	+13 52.5	10 3.6	- 8 5.8	+0.6418	0.5398	-0.2500	+87	- 7
37 Leonis	5.7	2.91	12.3	14 15.2	12 22.1	- 5 52.1	-0.3236	0.5381	0.2529	+28	-57
l Leonis	5.3	2.64	13.4	11 6.2	20 3 38.5	+ 8 54.2	-1.1030	0.5284	0.2678	-16	-79
χ Leonis	4.8	2.50	13.2	7 54.3	11 14.4	- 7 44.6	+0.1091	0.5246	0.2731	+50	-37
σ Leonis	4.1	2.39	13.7	6 36.4	19 4.4	- 0 9.4	-0.7176	0.5213	0.2770	+ 8	-83
80 Leonis	6.5	+2.34	-13.2	+ 4 26.4	21 23.1	+ 2 5.0	+0.8634	0.5205	-0.2778	+90	+ 1
89 Leonis	6.2	+2.28	-13.4	+ 3 38.7	21 1 35.6	+ 6 9.7	+0.5084	0.5192	-0.2792	+75	-18

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

NOVEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
β Virginis	3.7	+2.18	-13.8	+ 2 21.5	21 9 38.1	-10 2.8	-0.4203	0.5168	-0.2805	+23	-68
f Virginis	6.0	1.90	13.3	- 5 15.1	22 8 44.4	-11 38.8	+0.9851	0.5152	0.2767	+85	+ 8
B. A. C. 4394	6.1	1.77	13.5	8 25.2	23 0 35.7	+ 3 43.4	-0.0417	0.5174	0.2676	+40	-47
56 Virginis	7.0	1.74	13.3	9 48.7	3 40.1	+ 6 42.1	+0.5913	0.5183	0.2653	+76	-14
58 Virginis	7.0	1.73	13.3	9 59.5	5 0.8	+ 8 0.3	+0.4228	0.5186	0.2641	+66	-22
62 Virginis	7.0	+1.72	-13.3	-10 44.4	6 25.8	+ 9 22.7	+0.8287	0.5190	-0.2630	+79	- 1
α Virginis	1.5	1.71	13.4	10 36.7	8 49.8	+11 42.3	+0.0697	0.5195	0.2608	+45	-41
86 Virginis	5.9	1.64	13.5	11 53.9	18 59.7	- 2 28.5	-1.1850	0.5231	0.2505	-27	-90
B. A. C. 4700	5.6	1.59	13.2	15 48.3	24 6 59.5	+ 9 10.1	0.0000	0.5278	0.2355	+38	-44
B. A. C. 4923	7.3	1.55	12.9	20 56.3	25 4 45.6	+ 6 13.7	+0.6688	0.5380	0.2004	+68	- 8
				NEW	*MOON.*						
B. A. C. 5800	7.5	+1.81	-11.0	-26 51.6	27 17 4.9	- 7 33.5	-1.1040	0.5588	-0.0595	-43	-90
43 Ophiuchi	5.8	1.84	10.8	28 2.6	20 58.0	- 3 48.9	-0.0308	0.5591	0.0491	+17	-46
3 Sagittarii *var.*	5.0	1.94	10.0	27 47.6	28 7 20.7	+ 6 11.3	-0.6631	0.5584	0.0212	-18	-90
γ¹ Sagittarii *var.*	6.0	2.03	9.5	29 35.2	14 48.8	-10 36.8	+1.2100	0.5575	-0.0007	+60	+40
B. A. C. 6127	5.1	+2.02	- 9.3	-28 28.3	16 9.5	- 8 18.9	-0.0073	0.5571	+0.0029	+14	-49
τ Sagittarii	3.6	2.25	6.4	27 49.6	29 17 56.5	- 8 26.5	+0.2367	0.5475	0.0699	+33	-31
B. A. C. 6628	5.9	2.33	5.4	28 4.3	30 1 49.4	- 0 50.0	+1.1340	0.5436	0.0890	+62	-28
B. A. C. 6666	5.8	2.34	4.9	27 12.2	4 16.7	+ 1 32.3	+0.4028	0.5424	0.0947	+44	-22
ω Sagittarii	5.1	2.46	3.1	26 34.9	16 14.8	-10 53.6	+1.0160	0.5351	0.1216	+63	+16
A Sagittarii	5.3	+2.47	- 2.9	-26 28.9	17 42.9	- 9 28.5	+1.0860	0.5342	+0.1248	+64	+22
DECEMBER.											
17 Capricorni	6.0	+2.60	+ 1.5	-21 54.0	1 16 31.4	-11 23.7	-0.6229	0.5186	+0.1681	- 1	-81
η Capricorni	5.1	+2.66	+ 3.0	-20 16.4	2 1 39.6	- 2 32.4	-0.8130	0.5137	+0.1841	- 9	-90
B. A. C. 7325	6.9	2.67	3.1	20 36.3	2 49.4	- 1 24.7	-0.2310	0.5130	0.1859	+22	-58
χ Capricorni	5.4	2.70	3.0	21 37.2	3 45.0	- 0 30.8	+1.0680	0.5125	0.1874	+68	+18
26 Capricorni	5.4	2.68	3.3	20 37.3	4 7.1	- 0 9.3	+0.0296	0.5122	0.1877	+35	-43
27 Capricorni	6.5	2.69	3.2	20 58.9	4 15.4	- 0 1.3	+0.4547	0.5121	0.1881	+57	-20
φ Capricorni	5.5	+2.72	+ 3.6	-21 5.4	7 21.8	+ 2 59.5	+1.1690	0.5104	+0.1927	+69	+26
γ Capricorni	3.7	2.74	6.6	17 8.3	20 6.1	- 8 38.7	-0.6387	0.5030	0.2105	+ 4	-88
B. A. C. 7558	8.0	2.75	7.0	16 27.2	22 20.7	- 6 28.0	-0.9208	0.5020	0.2131	-12	-90
δ Capricorni	2.8	2.77	7.3	16 36.4	23 46.2	- 5 5.0	-0.4502	0.5013	0.2150	+14	-72
ι Aquarii	4.4	2.83	9.0	14 22.9	3 10 10.5	+ 5 1.5	-0.6117	0.4965	0.2271	+ 8	-84
39 Aquarii	6.4	+2.85	+ 9.6	-14 42.7	13 24.7	+ 8 10.2	+0.4955	0.4953	+0.2304	+66	-19
42 Aquarii	5.8	2.85	9.3	13 21.4	15 48.0	+10 29.5	-0.4490	0.4944	0.2327	+17	-71
45 Aquarii	6.3	2.87	10.3	13 49.9	16 59.7	+11 39.2	+0.3533	0.4939	0.2339	+59	-26
50 Aquarii	6.1	2.90	10.6	14 3.8	19 57.7	- 9 27.8	+1.3080	0.4929	0.2367	+76	+36
54 Aquarii	7.0	2.86	11.5	11 45.8	21 12.8	- 8 14.8	-0.9342	0.4926	0.2375	- 9	-90
B. A. C. 7835	6.5	+2.91	+11.1	-13 27.3	23 0.8	- 6 29.8	+1.3610	0.4919	+0.2394	+77	+43
σ Aquarii		2.87	11.9	11 13.0	23 23.1	- 6 8.1	-1.0160	0.4918	0.2398	-14	-90
58 Aquarii	6.7	2.88	11.9	11 26.7	23 57.1	- 5 35.1	-0.6284	0.4917	0.2403	+ 9	-85
64 Aquarii	6.9	2.90	12.9	10 34.5	4 4 8.4	- 1 30.6	-0.5799	0.4907	0.2440	+12	-81
65 Aquarii	7.0	2.92	13.0	10 39.3	6 12.6	+ 0 30.2	+0.0202	0.4900	0.2456	+42	-43
70 Aquarii	6.2	+2.96	+13.3	-11 6.7	9 14.3	+ 3 26.9	+1.2700	0.4895	+0.2477	+79	+31
Lalande 44734	6.8	2.97	13.6	10 37.1	11 34.7	+ 5 43.4	+1.3090	0.4891	0.2494	+79	+35
81 Aquarii	6.6	2.95	15.2	7 37.6	16 25.5	+10 26.3	-0.7605	0.4882	0.2527	+ 4	-90
82 Aquarii	6.4	2.96	15.4	7 8.8	17 4.0	-11 56.2	-1.1320	0.4882	0.2530	-20	-90
h¹ Aquarii	5.4	2.99	15.2	8 15.7	18 30.6	-11 32.0	+0.4659	0.4881	0.2540	+69	-20
h² Aquarii	7.4	+2.99	+15.1	- 8 19.4	18 35.9	-11 26.8	+0.5554	0.4878	+0.2542	+75	-16
h³ Aquarii	7.0	3.00	15.1	8 30.4	18 54.9	-11 8.4	+0.8364	0.4878	0.2543	+81	- 1
h⁴ Aquarii	8.0	3.00	15.3	8 15.7	19 39.2	-10 25.3	+0.7561	0.4878	0.2548	+78	- 5
96 Aqnarii	5.6	3.03	16.8	5 41.9	5 2 27.4	- 3 48.2	-0.3042	0.4875	0.2584	+28	-61
B. A. C. 8184	6.3	3.07	17.5	5 6.3	8 7.1	+ 1 52.2	+0.5199	0.4878	0.2610	+74	-18
Lalande 47041	7.1	+3.18	+20.4	- 0 51.8	6 0 56.2	- 5 56.0	+0.3467	0.4907	+0.2665	+64	-27
60 Piscium	6.2	+3.38	+24.1	+ 6 10.1	7 2 43.9	- 4 51.8	-0.3325	0.5003	+0.2655	+28	-62

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0. Δα	Red'ns from 1894.0. Δδ	Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x′	y′	N.	S.
		s	″	° ′	d h m	h m				°	°
62 Piscium	6.0	+3.38	+24.2	+ 6 43.7	7 3 11.9	− 4 24.6	−0.8054	0.5006	+0.2653	+ 3	−71
B. A. C. 221	5.9	3.40	23.6	4 44.5	3 12.9	− 4 23.6	+1.3170	0.5006	0.2653	+89	+35
70 Piscium	8.0	3.46	24.6	7 22.5	10 27.2	+ 2 38.1	+0.4231	0.5051	0.2630	+69	−21
ε Piscium	4.2	3.47	24.6	7 19.6	10 53.4	+ 3 3.6	+0.5892	0.5054	0.2628	+81	−13
100 Piscium	6.8	3.65	25.9	12 1.3	8 3 4.0	− 5 14.9	−0.1909	0.5175	0.2534	+34	−51
π Piscium	5.7	+3.67	+25.9	+11 36.4	4 11.0	− 4 10.0	+0.5286	0.5183	+0.2525	+77	−14
B. A. C. 490	7.5	3.68	25.9	11 32.6	4 27.7	− 3 53.8	+0.6649	0.5186	0.2523	+89	− 7
27 Arietis	6.3	4.02	26.0	17 14.5	9 5 33.8	− 3 36.6	+0.7408	0.5426	0.2245	+90	+ 2
B. A. C. 782	7.0	4.05	26.2	18 25.1	6 45.8	− 2 27.1	−0.2065	0.5441	0.2228	+33	−47
μ Arietis	6.0	4.13	26.0	19 34.0	10 39.4	+ 1 18.5	−0.5337	0.5481	0.2168	+16	−64
47 Arietis	6.0	+4.23	+25.4	+20 15.0	17 30.1	+ 7 54.7	+0.2084	0.5558	+0.2049	+56	−23
B. A. C. 920	7.0	4.25	25.5	21 12.1	17 50.6	+ 8 14.4	−0.6971	0.5562	0.2044	+ 7	−69
ε Arietis	4.3	4.25	25.5	20 55.4	17 59.5	+ 8 23.0	−0.3826	0.5562	0.2040	+24	−54
ζ Arietis	4.7	4.33	24.6	20 39.5	10 0 39.4	− 9 11.7	+1.2060	0.5639	0.1911	+90	+38
B. A. C. 1055	6.8	4.40	24.1	21 40.4	4 39.8	− 5 20.2	+0.9185	0.5683	0.1827	+90	+18
66 Arietis	6.0	+4.44	+24.1	+22 26.7	6 14.6	− 3 49.0	+0.4155	0.5701	+0.1791	+70	−10
7 Tauri	6.0	4.51	23.8	24 6.9	8 40.1	− 1 29.1	−0.8535	0.5727	0.1736	− 4	−66
9 Tauri	7.0	4.51	23.3	22 52.0	9 42.8	− 0 28.7	+0.5941	0.5737	0.1713	+85	+ 1
g Pleiadum	6.3	4.57	22.9	23 57.7	12 50.8	+ 2 32.0	+0.0068	0.5771	0.1635	+45	−28
17 Tauri	4.3	4.57	22.9	23 47.2	12 52.8	+ 2 33.9	+0.1875	0.5771	0.1635	+55	−19
18 Tauri	6.3	+4.58	+22.9	+24 30.8	12 59.6	+ 2 40.4	−0.5271	0.5772	+0.1632	+15	−57
19 Tauri	5.0	4.58	22.9	24 8.4	13 0.4	+ 2 41.2	−0.1470	0.5773	0.1632	+36	−36
20 Tauri	5.0	4.58	22.8	24 2.6	13 15.3	+ 2 55.6	−0.0084	0.5773	0.1625	+45	−29
21 Tauri	7.0	4.58	22.8	24 13.8	13 17.1	+ 2 57.3	−0.1926	0.5773	0.1625	+34	−38
22 Tauri	7.0	4.58	22.8	24 12.2	13 20.5	+ 3 0.6	−0.1570	0.5773	0.1624	+36	−36
23 Tauri	4.7	+4.58	+22.7	+23 37.5	13 27.7	+ 3 7.5	+0.4476	0.5784	+0.1620	+73	− 6
24 Tauri	8.0	4.58	22.7	23 47.7	13 52.1	+ 3 31.0	+0.3410	0.5784	0.1611	+65	−11
η Tauri	3.0	4.58	22.7	23 47.0	13 55.3	+ 3 34.0	+0.3548	0.5784	0.1609	+66	−11
B. A. C. 1170	6.3	4.57	22.5	23 6.1	14 16.6	+ 3 54.4	+1.1090	0.5785	0.1601	+90	+34
B. A. C. 1171	7.8	4.59	22.6	24 1.6	14 19.4	+ 3 57.2	+0.1824	0.5785	0.1599	+55	−19
26 Tauri	7.0	+4.58	+22.5	+23 32.3	14 30.5	+ 4 7.8	+0.7055	0.5792	+0.1593	+90	+ 8
27 Tauri	4.0	4.59	22.5	23 44.1	14 35.3	+ 4 12.4	+0.5182	0.5792	0.1592	+78	− 2
28 Tauri	6.2	4.59	22.5	23 49.1	14 36.0	+ 4 13.1	+0.4355	0.5792	0.1592	+72	− 6
B. A. C. 1192	6.0	4.63	21.6	25 22.5	15 1.4	+ 4 37.6	−1.0740	0.5793	0.1583	−20	−65
p Tauri	6.0	4.76	21.0	26 12.5	23 2.6	−11 40.4	−0.7276	0.5878	0.1368	+ 3	−64
φ Tauri	5.3	+4.83	+20.2	+27 6.1	11 2 41.1	− 8 10.7	−1.1460	0.5912	+0.1267	−29	−63
χ Tauri	5.7	4.78	19.8	25 23.0	3 33.8	− 7 20.1	+0.6924	0.5919	0.1239	+90	+11
W. iv, 1421	6.0	5.04	15.1	27 54.1	21 2.9	+ 9 24.9	−0.1381	0.6057	0.0689	+36	−27
22 Aurigæ	7.0	5.11	13.6	28 50.5	12 1 59.1	− 9 51.8	−0.7761	0.6084	0.0520	− 2	−61
β Tauri	2.0	5.11	13.2	28 31.2	3 2.4	− 8 51.2	−0.4037	0.6091	0.0484	+21	−40
B. A. C. 1772	6.3	+5.16	+11.5	+29 9.5	7 42.3	− 5 23.5	−0.8509	0.6109	+0.0322	− 6	−61
136 Tauri	5.7	5.13	9.9	27 35.4	12 44.8	+ 0 25.7	+0.8258	0.6120	+0.0142	+90	+28
49 Aurigæ	5.7	5.17	5.5	28 6.4	13 3 38.7	− 9 19.7	+0.1239	0.6128	−0.0391	+52	−11
53 Aurigæ	6.0	5.22	4.0	29 4.6	4 45.7	− 8 15.7	−0.8816	0.6128	0.0433	− 8	−61
54 Aurigæ	6.0	5.19	3.9	28 21.5	5 11.4	− 7 51.2	−0.1899	0.6127	0.0446	+33	−27
25 Geminorum	6.5	+5.18	+ 3.7	+28 17.7	5 49.9	− 7 14.3	−0.1584	0.6125	−0.0469	+35	−26
28 Geminorum	6.0	5.22	3.2	29 4.8	7 2.2	− 6 5.1	−0.9914	0.6120	0.0512	−16	−61
W. vi, 1656	8.2	5.10	1.0	26 59.5	13 54.4	+ 0 29.0	+0.6400	0.6098	0.0752	+90	+13
47 Geminorum	6.0	5.09	+ 0.1	27 1.8	16 38.1	+ 3 5.5	+0.3843	0.6088	0.0846	+69	− 2
53 Geminorum	6.3	5.12	− 0.6	28 4.9	18 16.1	+ 4 39.3	−0.7998	0.6078	0.0900	− 2	−62
59 Geminorum	6.9	+5.09	− 1.7	+27 50.5	21 23.9	+ 7 38.9	−0.8608	0.6060	−0.1006	− 6	−62
ι Geminorum	4.0	5.09	1.8	28 0.5	21 49.7	+ 8 3.7	−1.0690	0.6057	0.1019	−22	−62
υ Geminorum	4.3	5.03	3.0	27 7.7	14 1 34.3	+11 38.6	−0.6036	0.6036	0.1141	+10	−57
c Geminorum	6.0	4.96	4.1	26 2.1	4 36.7	− 9 26.8	+0.1188	0.6015	0.1237	+51	−18
ω¹ Cancri	6.0	4.89	6.0	25 40.9	10 53.1	− 3 26.2	−0.3681	0.5968	0.1428	+24	−46
ω² Cancri	6.3	+4.88	− 6.1	+25 22.7	11 11.6	− 3 8.5	−0.1139	0.5965	−0.1437	+38	−32
ψ² Cancri	5.7	+4.87	− 7.2	+25 49.6	14 29.1	+ 0 0.8	−1.0470	0.5939	−0.1532	−18	−64

ELEMENTS FOR THE PREDICTION OF OCCULTATIONS.

DECEMBER.

The Star's					At Conjunction in R. A.					Limiting Parallels.	
Name.	Mag.	Red'ns from 1894.0.		Apparent Declination.	Washington Mean Time.	Hour Angle H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	″	° ′	d h m	h m				°	°
λ Cancri	5.7	+4.78	− 8.2	+24 21.2	14 18 21.3	+ 3 43.5	−0.2015	0.5902	−0.1640	+33	−39
υ¹ Cancri	6.0	4.77	9.0	24 52.8	20 42.5	+ 5 58.9	−1.1170	0.5882	0.1703	−24	−65
υ² Cancri	5.8	4.75	9.2	24 29.6	21 28.2	+ 6 42.8	−0.8642	0.5875	0.1720	− 5	−66
υ³ Cancri	6.0	4.74	9.5	24 26.1	22 35.8	+ 7 47.7	−1.0030	0.5864	0.1752	−14	−66
υ⁴ Cancri	5.7	4.73	9.7	24 26.5	23 10.6	+ 8 21.1	−1.1130	0.5859	0.1767	−23	−66
B. A. C. 3206	6.3	+4.32	−14.4	+20 14.5	15 20 6.1	+ 4 28.0	−1.1500	0.5657	−0.2231	−24	−70
26 Leonis	7.7	3.99	16.4	15 43.3	16 10 26.9	− 5 42.5	−0.0117	0.5521	0.2463	+44	−39
34 Leonis	6.3	3.88	17.0	13 52.4	16 24.1	+ 0 2.2	+0.3516	0.5467	0.2540	+65	−22
37 Leonis	5.7	3.85	17.6	14 15.1	18 39.4	+ 2 12.8	−0.6046	0.5446	0.2567	+13	−43
l Leonis	5.3	3.58	19.1	11 6.1	17 9 37.5	− 7 19.4	−1.3900	0.5332	0.2705	−47	−79
χ Leonis	4.8	+3.43	−19.1	+ 7 54.2	17 6.1	− 0 5.4	−0.1938	0.5270	−0.2743	+34	−53
σ Leonis	4.1	3.32	19.6	6 36.3	18 0 49.8	+ 7 23.4	−1.0160	0.5241	0.2783	−10	−83
80 Leonis	6.5	3.26	19.1	4 26.3	3 6.8	+ 9 36.1	+0.5554	0.5231	0.2790	+78	−15
89 Leonis	6.2	3.20	19.4	3 38.6	7 16.7	−10 21.8	+0.2025	0.5211	0.2800	+55	−33
β Virginis	3.7	3.09	19.6	+ 2 21.4	15 15.5	− 2 38.0	−0.7209	0.5181	0.2806	+ 7	−86
B. A. C. 4394	6.0	+2.62	−18.5	− 8 25.3	20 6 12.6	+11 7.7	−0.3028	0.5151	−0.2650	+27	−61
56 Virginis	7.0	2.59	18.1	9 48.8	9 18.2	− 9 52.4	+0.3363	0.5154	0.2623	+61	−27
58 Virginis	7.0	2.58	18.1	9 59.6	10 39.4	− 8 33.7	+0.1691	0.5158	0.2613	+51	−35
62 Virginis	7.0	2.57	17.9	10 44.5	12 5.2	− 7 10.5	+0.5811	0.5159	0.2598	+75	−14
α Virginis	1.5	2.54	18.1	10 36.8	14 30.2	− 4 49.9	−0.1799	0.5166	0.2576	+32	−54
B. A. C. 4700	5.6	+2.38	−16.8	−15 48.4	21 12 53.5	− 7 8.5	−0.2064	0.5235	−0.2316	+28	−56
B. A. C. 4722	5.8	2.37	16.3	17 42.7	15 4.6	− 5 1.5	+1.3080	0.5246	0.2285	+72	+39
B. A. C. 4923	7.3	2.28	15.2	20 56.4	22 10 56.3	− 9 38.1	+0.5180	0.5333	0.1965	+61	−16
42 Libræ	5.7	2.23	14.1	23 28.6	23 6 40.4	+ 9 16.4	−0.2671	0.5430	0.1574	+16	−60
B. A. C. 5197	6.0	2.23	13.8	24 23.2	9 9.5	+11 40.4	+0.3266	0.5438	0.1520	+45	−26
b Scorpii	5.3	+2.23	−13.5	−25 27.4	11 27.4	−10 6.4	+1.1370	0.5450	−0.1469	+65	+26
A Scorpii (2d star)	5.2	2.23	13.5	25 0.8	12 38.8	− 8 57.4	+0.4852	0.5455	0.1443	+54	−17
B. A. C. 5253	5.8	2.22	13.6	24 13.2	12 47.4	− 8 49.2	−0.3899	0.5455	0.1440	+ 8	−69
B. A. C. 5254	5.8	2.22	13.7	23 39.9	12 48.8	− 8 47.8	−0.9984	0.5454	0.1438	−26	−90
B. A. C. 5255	6.0	2.23	13.5	25 5.8	12 54.7	− 8 42.1	+0.5369	0.5454	0.1436	+56	−15
3 Scorpii	6.7	+2.23	−13.5	−24 55.9	13 7.0	− 8 30.2	+0.3305	0.5454	−0.1431	+45	−26
π Scorpii	3.4	2.23	13.2	25 48.7	14 58.5	− 6 42.5	+1.0090	0.5464	0.1390	+64	+16
B. A. C. 5347	6.0	2.23	13.0	26 2.7	19 5.8	− 2 43.9	+0.7166	0.5481	0.1295	+64	− 4
σ Scorpii	3.4	2.22	12.8	25 20.5	24 0 53.6	+ 2 51.7	−0.7543	0.5505	0.1157	−14	−90
α Scorpii	1.4	2.22	12.4	26 12.0	4 29.5	+ 6 20.1	−0.2258	0.5517	0.1069	+13	−58
B. A. C. 5800	7.5	+2.23	−10.7	−26 51.6	23 59.5	+ 1 8.6	−1.1160	0.5564	−0.0569	−44	−90
				NEW	*MOON.*						
ω Sagittarii	5.1	2.48	2.3	26 34.8	27 23 27.5	− 1 53.2	+1.1810	0.5360	+0.1241	+63	+32
A Sagittarii	5.3	2.48	− 2.1	26 28.9	28 0 55.7	− 0 28.0	+1.2560	0.5351	0.1271	+64	+42
17 Capricorni	6.0	+2.51	+ 1.6	−21 54.0	23 45.0	− 2 25.5	−0.4035	0.5206	+0.1712	+11	−69
η Capricorni	5.1	2.53	3.0	20 16.4	29 8 53.8	+ 6 29.5	−0.5777	0.5145	0.1861	+ 4	−83
B. A. C. 7325	6.9	2.54	3.1	20 36.3	10 3.7	+ 8 37.3	+0.0130	0.5140	0.1879	+34	−44
χ Capricorni	5.4	2.56	3.0	21 37.1	10 59.4	+ 8 31.3	+1.3110	0.5134	0.1894	+68	+44
26 Capricorni	5.4	2.54	3.3	20 37.2	11 21.6	+ 8 52.9	+0.2723	0.5131	0.1900	+48	−30
27 Capricorni	6.5	+2.55	+ 3.2	−20 58.8	11 29.9	+ 9 0.9	+0.7000	0.5131	+0.1902	+69	− 6
γ Capricorni	3.7	2.56	6.1	17 8.3	30 3 22.9	+ 0 25.8	−0.3685	0.5037	0.2122	+18	−66
B. A. C. 7558	8.0	2.56	6.5	16 27.2	5 38.1	+ 2 37.0	−0.6480	0.5024	0.2150	+ 4	−88
ι Aquarii	4.4	2.62	8.2	14 22.9	17 31.2	− 9 50.1	−0.3145	0.4961	0.2280	+24	−63
39 Aquarii	6.4	2.63	8.7	14 42.8	20 46.5	− 6 40.3	+0.8007	0.4948	0.2314	+64	− 2
42 Aquarii	5.8	+2.63	+ 9.3	−13 21.4	23 10.8	− 4 20.0	−0.1442	0.4939	+0.2337	+32	−52
45 Aquarii	6.3	2.64	9.4	13 49.9	31 0 23.1	− 3 9.7	+0.6636	0.4932	0.2348	+76	−10
54 Aquarii	7.0	2.63	10.4	11 46.2	4 38.1	+ 0 58.2	−0.6153	0.4918	0.2385	+ 9	−84
σ Aquarii	5.1	2.64	10.8	11 13.4	6 49.4	+ 3 5.9	−0.6981	0.4907	0.2403	+ 5	−90
58 Aquarii	6.7	2.65	10.8	11 27.1	7 23.7	+ 3 39.2	−0.3068	0.4907	0.2408	+25	−62
64 Aquarii	6.9	+2.66	+11.5	−10 34.9	11 37.2	+ 7 45.8	−0.2435	0.4893	+0.2442	+29	−58
65 Aquarii	7.0	+2.68	+11.7	−10 39.7	13 42.6	+ 9 47.9	+0.3559	0.4885	+0.2435	+61	−26

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1894.

Date.	The Star's		Immersion.				Emersion.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
	NEW MOON.										
Jan. 11	χ Aquarii	5½	2 18	6 52	89	51	3 14	7 48	198	155	0 56
18	136 Tauri	5	12 11	16 16	105	53	13 0	17 5	266	218	0 49
19	W. vi, 1656	8	13 7	17 8	140	86	13 47	17 48	247	197	0 40
20	c Geminorum *	6	0 50	4 49	110	160	1 39	5 38	254	308	0 49
20	ω^1 Cancri	6	8 21	12 19	83	62	9 27	13 25	319	269	1 6
20	ω^2 Cancri	6	8 56	12 54	129	88	10 6	14 4	273	217	1 10
	NEW MOON.										
Feb. 11	19 Arietis	6	4 17	6 49	76	34	5 30	8 2	226	174	1 13
12	ζ Arietis	5	8 46	11 13	97	43	9 40	12 7	237	185	0 54
16	c Geminorum	6	15 7	17 17	59	13	15 39	17 49	332	289	0 32
20	σ Leonis	4	7 59	9 55	152	198	9 2	10 58	277	314	1 3
	NEW MOON.										
Mar. 16	λ Cancri	6	14 26	14 47	62	9	14 59	15 20	340	290	0 33
18	37 Leonis	6	15 37	15 49	57	4	16 2	16 14	1	309	0 25
20	β Virginis	4	10 47	10 52	173	191	11 44	11 49	269	271	0 57
	NEW MOON.										
Apr. 8	9 Tauri	7	9 26	8 17	74	21	10 21	9 12	266	216	0 55
10	136 Tauri *	5	13 53	12 35	160	118	14 13	12 55	209	170	0 20
12	ω^2 Cancri	6	14 23	12 57	65	13	14 48	13 22	333	284	0 25
	NEW MOON.										
May 9	c Geminorum *	6	15 10	11 58	58	12	15 40	12 28	333	290	0 30
	NEW MOON.										
June 15	3 Scorpii	7	13 15	7 38	150	180	14 23	8 46	267	285	1 8
	NEW MOON.										
July 9	58 Virginis ‡	7	17 41	10 29	100	52	18 42	11 30	312	262	1 1
16	B. A. C. 6628	6	20 38	12 58	111	96	21 40	14 0	209	181	1 2
18	χ Capricorni	5½	22 46	14 58	67	45	24 2	16 14	227	192	1 16
20	B. A. C. 7835 *	6	15 24	7 29	50	100	16 19	8 24	270	322	0 55
23	B. A. C. 221	6	19 42	11 34	15	66	20 28	12 20	279	329	0 46
26	ζ Arietis *	5	18 33	10 14	67	106	19 19	11 0	252	296	0 46
26	B. A. C. 1055	7	22 26	14 7	59	115	23 27	15 8	245	302	1 1
27	χ Tauri	6	21 56	13 33	36	88	22 39	14 16	284	339	0 43
	NEW MOON.										
Aug. 13	ω Sagittarii	5	18 11	8 42	30	50	19 16	9 47	300	306	1 5
13	A Sagittarii	5	20 14	10 44	61	57	21 42	12 12	252	230	1 28
16	50 Aquarii	6	21 7	11 25	60	77	22 33	12 51	223	219	1 26
18	20 Piscium	6	18 3	8 14	29	80	18 56	9 7	272	321	0 53
26	47 Geminorum	6	22 26	12 4	97	135	23 11	12 49	263	306	0 45
	NEW MOON.										
Sept. 11	φ Capricorni	5½	17 12	5 48	12	55	17 51	6 27	311	349	0 39
13	70 Aquarii	6	17 53	6 21	19	67	18 41	7 9	288	332	0 48
13	Lalande 44734	7	20 36	9 4	46	76	21 57	10 25	239	251	1 21

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

OCCULTATIONS VISIBLE AT WASHINGTON DURING THE YEAR 1894.

Date.	The Star's		Immersion.				Emersion.				Duration of Occultation.
			Washington.		Angle from		Washington.		Angle from		
	Name.	Mag.	Sidereal Time.	Mean Time.	North Point.	Vertex.	Sidereal Time.	Mean Time.	North Point.	Vertex.	
			h m	h m	°	°	h m	h m	°	°	h m
Sept. 18	47 Arietis	6	4 28	16 36	65	23	5 48	17 56	247	193	1 20
19	9 Tauri †	7	19 57	8 2	10	55	20 22	8 27	307	356	0 25
19	23 Tauri	5	23 40	11 44	58	116	24 47	12 51	247	305	1 7
19	24 Tauri	8	0 15	12 19	48	106	0 23	13 27	256	310	1 8
19	η Tauri	3	0 17	12 21	53	111	0 27	13 31	251	305	1 10
19	B. A. C. 1171	8	0 55	12 59	28	84	2 6	14 10	276	324	1 11
19	27 Tauri	4	1 6	13 10	105	161	2 4	14 8	200	248	0 58
19	28 Tauri	6	1 6	13 10	86	142	2 16	14 20	219	263	1 10
23	ω^1 Cancri	6	2 17	14 5	13	69	2 25	14 13	358	54	0 8
23	ω^2 Cancri	6	2 14	14 2	98	153	3 14	15 2	273	331	1 0
25	26 Leonis †	8	2 23	14 3	148	194	3 2	14 42	247	297	0 39
	NEW MOON.										
Oct. 6	B. A. C. 6628	6	23 26	10 23	121	79	24 7	11 4	197	149	0 41
8	χ Capricorni	5½	1 32	12 21	117	71	2 6	12 55	184	135	0 34
11	B. A. C. 8184	6	4 44	15 20	42	352	5 47	16 23	257	206	1 3
13	B. A. C 221	6	19 54	6 24	64	114	20 59	7 29	227	274	1 5
13	70 Piscium	8	6 7	16 35	54	2	7 6	17 34	254	203	0 59
13	ε Piscium	4	6 25	16 53	83	31	7 20	17 48	227	176	0 55
15	27 Arietis	6	22 41	9 3	47	101	23 47	10 9	245	294	1 6
16	B. A. C. 1055	7	22 2	8·20	101	157	22 48	9 6	204	261	0 46
16	66 Arietis	6	0 11	10 28	42	98	1 17	11 34	258	308	1 6
17	χ Tauri	6	21 52	8 6	78	130	22 42	8 56	232	287	0 50
19	49 Aurigæ	6	0 32	10 37	73	129	1 29	11 34	275	334	0 57
19	54 Aurigæ	6	2 31	12 36	35	96	3 15	13 20	315	16	0 44
19	25 Geminorum	6	3 11	13 16	61	122	4 17	14 22	293	354	1 6
20	c Geminorum	6	3 9	13 10	146	205	3 50	13 51	223	283	0 41
	NEW MOON.										
Nov. 3	ω Sagittarii	5	0 4	9 11	134	90	0 28	9 35	179	132	0 24
7	h^3 Aquarii	7	1 53	10 44	85	47	2 52	11 43	201	157	0 59
7	h^4 Aquarii	8	2 51	11 42	87	43	3 47	12 38	204	156	0 56
	NEW MOON.										
Dec. 5	B. A. C. 8184	6	1 30	8 31	76	44	2 38	9 39	207	165	1 8
7	70 Piscium	8	4 15	11 7	100	54	5 8	12 0	198	148	0 53
9	27 Arietis	6	21 4	3 49	40	94	21 58	4 43	260	314	0 54
10	9 Tauri	7	2 10	8 51	126	168	2 46	9 27	181	208	0 36
10	g Pleiadum	6	6 58	13 38	33	335	7 46	14 27	304	246	0 48
10	17 Tauri	4	6 45	13 25	74	16	7 55	14 35	262	204	1 10
10	23 Tauri	5	7 35	14 15	128	71	8 19	14 59	212	155	0 44
10	24 Tauri	8	7 58	14 38	96	38	8 58	15 38	245	189	1 0
10	η Tauri	3	8 2	14 42	99	41	9 1	15 41	243	187	0 59
10	B. A. C. 1171	8	8 35	15 14	57	0	9 29	16 8	287	233	0 54
10	27 Tauri	4	8 53	15 32	128	72	9 34	16 13	217	163	0 41
10	28 Tauri	6	8 49	15 28	107	51	9 42	16 21	238	184	0 53
13	47 Geminorum	6	10 48	17 16	85	24	11 43	18 11	311	252	0 55
16	34 Leonis	6	9 26	15 42	114	133	10 41	16 57	319	303	1 15
	NEW MOON.										

NOTE.—The angles of position are counted from the north point and vertex of the moon's limb, toward the east.
* Whole occultation below the horizon of Washington.
† Immersion below the horizon of Washington.
‡ Emersion below the horizon of Washington.

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 72°			Lat. 66°			Lat. 60°			Lat. 54°			Lat. 48°			Lat. 42°			Lat. 36°		
	x'			x'			x'			x'			x'			x'			x'		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	2	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	6	5	6	7
20	3	3	4	4	5	5	5	6	7	6	7	9	8	9	11	9	10	12	11	12	14
30	5	5	6	6	7	8	8	9	11	10	11	13	12	13	16	14	16	18	16	18	22
40	6	7	8	8	9	11	11	12	14	13	15	17	16	18	21	18	21	24	21	24	29
50	7	8	10	10	11	13	13	15	17	16	19	21	19	22	26	22	26	30	26	30	36
1 0	9	10	11	12	14	16	16	18	21	19	22	26	23	26	31	26	31	36	30	35	42
10	10	12	13	14	16	18	18	21	24	22	26	30	26	30	36	31	35	42	35	40	48
20	12	13	15	16	18	21	21	23	27	25	29	34	30	34	40	35	40	47	39	45	54
30	13	15	17	18	20	23	23	26	30	28	32	37	33	38	45	39	44	52	43	50	59
40	14	16	18	20	22	25	25	29	33	31	35	41	36	42	49	42	48	57	47	54	64
50	16	18	20	21	24	28	27	31	36	34	38	44	39	45	53	45	52	61	51	58	68
2 0	17	19	22	23	26	30	29	33	39	36	41	47	42	48	56	48	55	65	54	62	72
10	18	20	23	25	28	32	31	36	41	38	43	50	45	51	59	51	59	68	57	66	76
20	19	22	24	26	30	34	33	38	43	40	46	53	47	54	62	54	62	71	60	69	80
30	20	23	26	28	31	36	35	40	45	42	48	55	50	56	65	57	64	74	63	72	83
40	21	24	27	29	33	37	37	42	47	44	50	58	52	59	68	59	67	77	65	74	86
50	22	25	28	30	34	39	38	43	49	46	52	60	54	61	70	61	69	79	68	76	88
3 0	23	26	30	31	35	40	40	45	51	48	54	62	56	63	72	63	71	81	70	79	90
10	24	27	31	33	36	42	41	46	53	49	56	63	57	65	74	65	73	83	72	81	92
20	25	28	32	34	38	43	42	47	54	51	57	65	59	66	75	66	74	85	73	82	93
30	26	29	33	35	39	44	43	49	55	52	58	66	60	67	77	68	76	86	74	83	95
40	26	29	33	36	40	45	44	50	56	53	59	67	61	69	78	69	77	87	75	84	96
50	27	30	34	36	41	46	45	51	57	54	60	68	62	70	79	70	78	88	76	85	96
4 0	28	31	35	37	41	47	46	52	58	55	61	69	63	70	79	71	79	89	77	86	97
10	28	31	35	38	42	47	47	52	59	56	62	70	64	71	80	71	79	89	78	86	97
20	29	32	36	38	42	48	47	53	59	56	62	70	64	71	80	72	80	89	78	87	97
30	29	32	36	39	43	48	48	53	60	57	63	71	65	72	81	72	80	90	79	87	97
40	29	33	37	39	43	49	48	53	60	57	63	71	65	72	81	72	80	89	79	87	97
50	30	33	37	39	44	49	48	54	60	57	63	71	65	72	81	72	80	89	79	87	96
5 0	30	33	37	39	44	49	49	54	60	57	63	71	65	72	80	72	80	89	78	86	95
10	30	33	37	40	44	49	49	54	60	57	63	71	65	72	80	72	79	88	78	86	95
20	30	33	37	40	44	49	49	54	60	57	63	71	65	71	79	72	79	88	78	85	94
30	30	33	37	40	44	49	49	54	60	57	63	70	64	71	79	71	78	87	77	85	93
40	30	33	37	39	44	49	48	53	59	56	62	70	64	70	78	70	77	86	76	84	91
50	30	33	37	39	43	48	48	53	59	56	61	69	63	70	77	70	77	85	75	83	90
6 0	30	33	37	39	43	48	48	52	58	55	61	68	63	69	76	69	76	84	74	82	89
10	30	33	37	39	43	47	47	52	58	55	60	67	62	68	75	68	75	82	73	80	87
20	29	32	36	38	42	47	47	51	57	54	60	66	61	67	74	67	73	81	72	79	85
30	29	32	36	38	42	46	46	51	56	53	59	65	60	66	73	66	72	80	71	78	84
40	29	32	35	37	41	46	45	50	55	53	58	64	59	65	71	65	71	78	70	76	82
50	28	31	35	37	40	45	45	49	54	52	57	62	58	63	70	63	69	76	68	74	80
7 0	28	31	34	36	40	44	44	48	53	51	55	61	57	62	68	62	68	75	67	73	78
10	27	30	34	35	39	43	43	47	52	50	54	60	56	61	67	61	66	73	65	71	76
20	27	30	33	35	38	42	42	46	51	48	53	58	54	59	65	59	65	71	64	68	74
30	26	29	32	34	37	41	41	45	49	47	52	57	53	58	63	58	63	69	62	67	71
40	26	28	31	33	36	40	40	44	48	46	50	55	51	56	62	56	61	67			
50	25	27	31	32	35	39	39	42	47	45	49	53	50	54	60	54	59	65			
8 0	24	27	30	31	34	38	38	41	45	43	47	52	48	52	58	53	57	63			
10	24	26	29	30	33	37	36	40	44	42	46	50	47	51	56	52	55	60			
20	23	25	28	29	32	35	35	38	42	40	44	48	45	49	54						
30	22	24	27	28	31	34	34	37	41	39	42	46	43	47	52						
40	21	23	26	27	30	33	33	35	39	37	41	44	41	45	49						
50	20	22	25	26	28	31	31	34	37	36	39	42	40	43	47						
9 0	19	21	24	25	27	30	30	32	35	34	37	40									
10	18	20	22	24	26	28	28	31	34	32	35	38									
20	18	19	21	22	24	27	27	29	32	31	33	36									
30	16	18	20	21	23	25	25	27	30	29	31	34									
40	15	17	19	20	22	24	24	26	28	27	29	32									

(*Concluded at bottom of next page.*)

DOWNES'S TABLE GIVING VALUES OF τ.

FOR COMPUTING THE TIME AND HOUR-ANGLE OF APPARENT CONJUNCTION.

h	Lat. 30°			Lat. 24°			Lat. 18°			Lat. 12°			Lat. 6°			Lat. 0°		
	x'			*x'*			*x'*			*x'*			*x'*			*x'*		
	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	6	7	8	7	7	9	7	8	9	7	8	10	7	8	10	8	9	11
20	12	14	16	13	14	18	14	16	19	14	16	20	14	17	21	15	18	21
30	17	20	24	19	22	27	20	24	29	21	25	30	21	25	31	22	26	32
40	23	27	32	25	29	36	26	32	39	28	33	40	28	34	41	29	34	42
50	28	33	40	31	36	44	32	39	48	35	40	50	35	42	51	35	42	52
1 0	33	39	47	36	42	52	38	46	56	40	47	59	41	49	60	41	49	61
10	38	45	54	41	48	59	44	52	63	46	54	67	47	56	68	47	56	69
20	43	50	60	46	54	65	49	58	70	52	60	74	53	62	75	53	63	76
30	48	55	66	51	60	71	54	64	76	57	66	79	58	68	81	59	69	82
40	52	60	71	56	65	77	59	69	82	62	72	84	63	73	87	64	74	88
50	56	64	76	60	69	82	64	74	87	66	77	89	68	78	92	68	79	93
2 0	59	68	80	64	73	86	68	78	91	70	81	95	72	83	97	72	83	98
10	62	72	84	67	77	90	71	81	95	74	85	99	75	87	101	76	87	102
20	65	75	87	70	81	94	74	85	99	77	88	103	78	90	105	79	91	106
30	68	78	90	73	84	97	77	88	102	80	91	106	81	93	108	82	94	109
40	71	81	93	76	87	100	80	91	105	83	94	109	84	96	111	85	97	112
50	74	83	96	78	89	102	82	93	107	85	96	111	87	98	113	87	99	114
3 0	76	85	98	80	91	104	84	95	109	87	98	113	89	100	115	89	101	116
10	77	87	99	82	92	106	86	97	111	89	100	114	91	102	116	91	103	117
20	79	89	101	84	94	107	88	99	112	91	102	115	92	104	118	93	104	118
30	80	90	102	85	95	108	89	100	113	92	103	116	94	105	119	94	105	119
40	81	91	103	86	96	109	90	101	114	93	104	117	95	106	119	95	106	120
50	82	92	104	87	97	110	91	101	114	94	104	118	95	106	120	96	107	120
4 0	83	92	104	88	98	110	92	102	114	94	105	118	96	107	120	97	107	120
10	84	93	104	88	98	110	92	102	114	95	105	118	96	107	120	97	107	120
20	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	120
30	84	93	104	89	98	110	92	102	114	95	105	117	96	107	119	97	107	119
40	84	93	104	89	98	109	92	102	113	95	104	116	96	106	118	97	107	119
50	84	93	103	88	97	108	92	101	113	94	104	115	96	106	117	96	106	118
5 0	84	92	102	86	97	108	91	101	112	94	103	114	95	105	116	96	105	117
10	83	92	102	88	96	107	91	100	110	93	102	113	95	104	115	95	104	115
20	83	91	101	87	95	106	90	99	109	92	101	112	94	103	114	94	103	114
30	82	90	100	86	94	104	89	98	108	92	100	111	93	102	112	93	102	113
40	81	89	98	85	93	103	88	97	106	91	99	109	92	100	110			
50	80	88	97	84	92	101	87	95	105	89	97	107						
6 0	79	87	95	83	91	100	86	94	103	88	96	105						
10	78	85	94	82	89	98	84	92	101									
20	77	84	92	80	88	96	82	91	99									
30	75	82	90	79	86	94												
40	74	81	88	77	84	92												
50	72	79	86															
7 0	71	77	84															

(*Concluded from preceding page.*)

h	Lat. 72°			Lat. 66°			Lat. 60°			*h*	Lat. 72°			Lat. 66°			Lat. 60°		
	x'			*x'*			*x'*				*x'*			*x'*			*x'*		
	.62	.56	.50	.62	.56	.50	.62	.56	.50		.62	.56	.50	.62	.56	.50	.62	.56	.50
h m	m	m	m	m	m	m	m	m	m	h m	m	m	m	m	m	m	m	m	m
9 50	14	16	18	18	20	22	22	24	26	11 0	7	8	8	9	10	11	10	11	12
10 0	13	15	16	17	19	21	20	22	24	10	6	6	7	7	8	9	9	9	10
10	12	14	15	16	17	19	19	21	22	20	5	5	6	6	6	7	7	8	8
20	11	12	14	15	16	17	17	19	20	30	3	4	4	4	5	5			
30	10	11	12	13	14	16	16	17	18	40	2	3	3	3	3	4			
40	9	10	11	12	13	14	14	15	16	50	1	1	1	1	2	2			
50	8	9	10	10	11	12	12	13	14	12	0	0	0	0	0	0			

FOR WASHINGTON MEAN NOON.

Date	k	i	θ	L	Date.	k	i	θ	L
Jan. 1	0.902	36°.4	181°.7	28.4	July 5	0.179	129°.9	19°.6	21.5
6	0.934	29.8	176.0	26.2	10	0.098	143.5	25.9	13.9
11	0.957	23.8	169.4	25.3	15	0.036	158.2	40.3	5.7
16	0.977	18.0	161.1	25.5	20	0.010	168.4	96.5	1.7
21	0.989	12.1	148.9	26.8	25	0.037	157.7	158.2	6.3
26	0.997	6.4	118.9	29.4	30	0.119	139.6	174.5	18.6
31	0.997	6.2	34.9	33.9	Aug. 4	0.251	119.9	182.1	34.9
Feb. 5	0.983	14.8	0.0	40.7	9	0.423	98.9	187.9	51.6
10	0.944	27.3	347.5	50.3	14	0.617	76.4	193.8	64.8
15	0.860	43.9	340.9	61.8	19	0.797	53.5	200.3	69.5
20	0.712	64.9	336.2	70.2	24	0.923	32.2	208.9	64.1
25	0.503	89.4	332.4	66.4	29	0.984	14.4	222.8	53.8
Mar. 2	0.278	116.3	328.0	46.2	Sept. 3	0.998	5.5	339.1	44.0
7	0.100	143.2	320.1	19.4	8	0.987	13.0	7.5	36.6
12	0.013	166.8	288.0	2.7	13	0.964	21.8	17.6	31.7
17	0.024	162.2	181.6	4.5	18	0.936	29.3	21.4	28.7
22	0.104	142.4	163.6	16.4	23	0.905	36.0	23.4	27.1
27	0.210	125.4	158.6	26.2	28	0.869	42.4	24.2	26.7
Apr. 1	0.313	111.9	155.8	30.9	Oct. 3	0.830	48.7	24.3	27.5
6	0.405	100.9	153.9	32.4	8	0.780	56.0	23.9	29.4
11	0.489	91.3	152.5	32.8	13	0.718	64.1	23.1	32.5
16	0.560	83.2	151.5	32.9	18	0.637	74.0	22.2	36.7
21	0.629	75.0	150.9	33.8	23	0.528	86.8	21.4	41.3
26	0.699	66.6	150.8	35.8	28	0.381	103.8	20.9	42.9
May 1	0.765	58.0	151.5	39.0	Nov. 2	0.201	126.8	21.4	33.4
6	0.848	45.9	152.9	45.0	7	0.037	157.8	22.8	8.3
11	0.923	32.1	155.5	52.8	12	0.016	165.4	203.6	4.0
16	0.982	15.2	160.9	61.5	17	0.184	129.2	205.8	36.8
21	0.998	4.6	325.9	67.3	22	0.419	99.3	205.1	56.5
26	0.953	25.1	342.6	66.1	27	0.616	76.6	203.3	55.6
31	0.858	44.3	350.0	59.2	Dec. 2	0.752	59.7	200.6	46.8
June 5	0.745	60.6	354.6	50.8	7	0.840	47.1	197.2	38.5
10	0.635	74.3	359.6	43.7	12	0.898	37.2	193.0	32.5
15	0.534	86.0	4.2	38.5	17	0.936	29.3	187.9	28.5
20	0.442	96.7	8.2	34.6	22	0.961	22.7	181.7	26.0
25	0.353	107.1	11.9	31.1	27	0.979	16.6	173.7	24.9
30	0.265	118.0	15.5	27.1	32	0.991	10.9	158.5	24.8

NOTATION.

k, the ratio of the illuminated portion of the apparent disk to the entire apparent disk considered as the superficies of a circle.

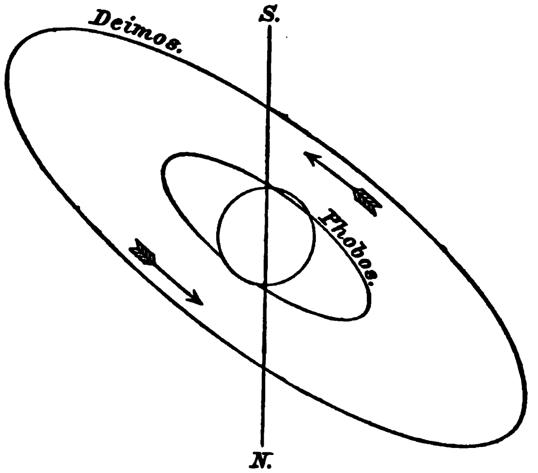
i, the angle between the sun and earth, as seen from the planet.

θ, the angle which the line joining the cusps, or extremities of the illuminated portion, makes with the meridian.

L, the brilliancy of the disk. The unit of L is the amount of light received by an eye from a circular disk with the same albedo as the planet, subtending an angular radius of one second of arc, situated at distance unity from the sun, and illuminated by the latter as the mean disk of the planet is illuminated.

FOR WASHINGTON MEAN NOON.

Date.	*k*	*i*	*θ*	*L*	Date.	*k*	*i*	*θ*	*L*
Jan. 1	0.343	108°.3	340°.5	208.5	June 10	0.689	67°.8	158°.8	88.8
6	0.305	112.9	339.0	215.0	15	0.707	65.5	160.2	85.1
11	0.264	118.1	337.5	217.7	20	0.725	63.3	161.8	81.7
16	0.221	123.8	335.7	213.4	25	0.742	61.1	163.7	78.6
21	0.175	130.5	333.4	199.1	30	0.757	58.9	165.7	75.7
26	0.130	137.8	330.4	171.4	July 5	0.774	56.8	167.9	73.1
31	0.085	146.1	325.3	129.3	10	0.789	54.7	170.4	70.8
Feb. 2	0.069	149.5	322.8	110.4	15	0.804	52.6	173.0	68.7
4	0.054	153.2	318.9	90.2	20	0.818	50.5	175.8	66.7
6	0.041	156.6	314.7	71.2	25	0.832	48.5	178.6	64.9
8	0.030	160.1	308.4	53.4	30	0.845	46.4	181.5	63.3
10	0.021	163.3	299.3	38.6	Aug. 4	0.858	44.3	184.4	61.8
12	0.015	166.1	286.5	27.3	9	0.870	42.3	187.3	60.4
14	0.011	167.9	268.4	20.7	14	0.882	40.3	190.1	59.2
16	0.010	168.3	242.6	19.6	19	0.893	38.3	192.8	58.0
18	0.013	167.0	226.9	23.9	24	0.903	36.2	195.5	57.0
20	0.018	164.6	211.8	33.7	29	0.913	34.2	197.9	56.0
22	0.026	161.6	201.2	46.6	Sept. 3	0.923	32.3	200.1	55.1
24	0.036	158.2	193.8	62.1	8	0.932	30.3	202.2	54.2
26	0.048	154.7	188.5	80.0	13	0.940	28.3	204.1	53.4
28	0.062	151.2	184.5	98.4	18	0.948	26.4	205.6	52.7
Mar. 2	0.077	147.7	181.4	117.2	23	0.955	24.4	207.0	52.1
7	0.120	139.5	175.9	158.4	28	0.962	22.6	208.1	51.4
12	0.165	132.1	172.2	184.9	Oct. 3	0.967	20.6	209.1	50.8
17	0.210	125.4	169.3	199.9	8	0.973	18.8	209.7	50.4
22	0.253	119.6	166.9	204.1	13	0.978	17.0	210.1	49.9
27	0.294	114.3	164.8	201.6	18	0.982	15.1	210.2	49.6
Apr. 1	0.333	109.8	162.9	194.9	23	0.987	13.2	210.1	49.1
6	0.367	105.2	161.3	184.9	28	0.990	11.4	209.8	48.7
11	0.402	101.3	159.7	175.8	Nov. 2	0.993	9.6	209.2	48.4
16	0.433	97.7	158.6	165.6	7	0.995	7.9	208.4	48.1
21	0.463	94.3	157.5	155.5	12	0.997	6.1	207.7	47.9
26	0.491	91.1	156.6	146.0	17	0.999	4.4	206.8	47.7
May 1	0.517	88.0	156.0	137.1	22	1.000	2.6	207.3	47.5
6	0.542	85.2	155.5	129.0	27	1.000	1.3	213.8	47.4
11	0.566	82.4	155.3	121.5	Dec. 2	1.000	0.0	271.7	47.3
16	0.588	79.8	155.3	114.6	7	1.000	2.0	8.6	47.3
21	0.610	77.3	155.5	108.4	12	0.999	3.9	8.2	47.3
26	0.631	74.8	156.0	102.8	17	0.998	5.6	7.0	47.3
31	0.651	72.4	156.7	97.6	22	0.996	7.3	4.4	47.4
June 5	0.671	70.0	157.6	92.6	27	0.994	8.8	2.0	47.6
10	0.689	67.8	158.8	88.8	32	0.992	10.5	359.7	47.8



APPARENT ORBITS OF THE SATELLITES OF MARS DURING THE OPPOSITION OF 1894, AS SEEN IN AN INVERTING TELESCOPE.

The circle represents the disk of the planet and is on the same scale as the orbits. The mean motions of the satellites have been corrected by the observations made during the oppositions of 1888 and 1890.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

PHOBOS.									DEIMOS.					
	d	h		d	h		d	h		d	h		d	h
Sept.	23	17.5 W.	Oct.	10	11.3 E.	Oct.	27	5.0 W.	Sept.	23	21.2 W.	Oct.	22	6.4 E.
	24	20.3 E.		11	14.0 W.		28	7.8 E.		25	18.6 E.		24	3.8 W.
	25	23.1 W.		12	16.8 E.		29	10.6 W.		27	16.0 W.		26	1.2 E.
	27	1.9 E.		13	19.6 W.		30	13.4 E.		29	13.4 E.		27	22.6 W.
	28	4.6 W.		14	22.4 E.		31	16.1 W.	Oct.	1	10.8 W.		29	20.0 E.
	29	7.4 E.		16	1.2 W.	Nov.	1	18.9 E.		3	8.2 E.		31	17.4 W.
	30	10.2 W.		17	3.9 E.		2	21.7 W.		5	5.6 W.	Nov.	2	14.8 E.
Oct.	1	13.0 E.		18	6.7 W.		4	0.5 E.		7	3.0 E.		4	12.2 W.
	2	15.8 W.		19	9.5 E.		5	3.3 W.		9	0.4 W.		6	9.6 E.
	3	18.6 E.		20	12.3 W.		6	6.0 E.		10	21.9 E.		8	7.1 W.
	4	21.3 W.		21	15.1 E.		7	8.8 W.		12	19.3 W.		10	4.5 E.
	6	0.1 E.		22	17.9 W.		8	11.6 E.		14	16.7 E.		12	1.9 W.
	7	2.9 W.		23	20.6 E.		9	14.4 W.		16	14.1 W.		13	23.3 E.
	8	5.7 E.		24	23.4 W.		10	17.2 E.		18	11.5 E.		15	20.7 W.
	9	8.5 W.		26	2.2 E.		11	20.0 W.		20	8.9 W.		17	18.0 E.

Date.	Position Angle.	Distance.	Date.	Position Angle.	Distance.
Sept. 23	52°.8	28″.4	Sept. 23	54°.1	70″.9
Oct. 19	53.7	29.7	Oct. 19	55.0	74.3
Nov. 15	54.9	24.5	Nov. 15	56.2	61.3

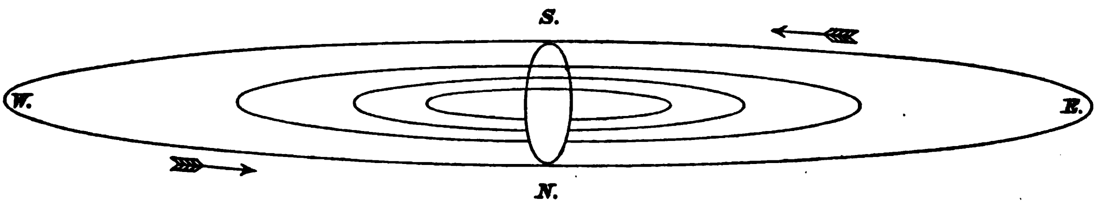
For Phobos every seventh eastern and western elongation is given, and for Deimos every third; the intermediate ones may be found by adding the periodic time of each satellite.

Periodic time of Phobos, $0^d\ 7^h\ 39^m\ 13^s.937$. Periodic time of Deimos, $1^d\ 6^h\ 17^m\ 54^s.377$.

APPARENT DISK OF MARS.

January	1,	0.957	May 31,	0.852	September	28,	0.970
	31,	0.934	June 30,	0.841	October	28,	0.997
March	2,	0.910	July 30,	0.853	November	27,	0.944
April	1,	0.885	August 29,	0.892	December	27,	0.901
May	1,	0.863					

The numbers in this table are the versed sines of the illuminated disk, the apparent diameter of the planet being taken as unity.



APPARENT ORBITS OF THE SATELLITES OF JUPITER IN 1894, AS SEEN IN AN INVERTING TELESCOPE.

(THE VERTICAL SCALE IS THREE TIMES THE HORIZONTAL ONE.)

The object of this figure is to facilitate the identification of the satellites in cases where the diagrams of configurations do not suffice for that purpose: reference to the above diagram enables one to identify the inner and outer satellite of the pair. The central, vertical ellipse represents the disk of Jupiter, elongated three times in the vertical direction to correspond to the representation of the orbits of the satellites.

Facing each page of the phenomena of Jupiter's satellites, pages 460—480, is the page of diagrams of configurations, for the same month. The light disks ○ in the vertical row in the middle of the page represent the relative position of Jupiter each day. The dots adjacent in the same horizontal space represent the positions of the several satellites on the same day, at the hour and minute of Washington mean time indicated above the diagrams. The latitudes of the satellites are always considered zero in constructing the diagrams, except where two or more satellites chance to be at nearly the same distance from the planet, when they are placed one above the other according to their apparent latitudes. The numerals designating the satellites are placed on the right or left hand side of the dot, according as the motion of the satellite, for the time of the configuration, is toward the east or toward the west—the motion being always toward the numeral. Frequently, at the epoch of the configuration, one or more satellites will be invisible, being projected on the disk of the planet: this phenomenon is indicated by a light disk ○ at the left hand side of the page. Frequently, also, one or more satellites will be invisible, being concealed in occultation behind the disk, or eclipsed in the shadow of the planet: this phenomenon is indicated by a dark disk ● at the right hand side of the page. In both cases, the annexed numeral serves to point out which satellite is thus rendered invisible.

When an observation is made at a different hour from that for which the diagram is constructed, the motion of the satellite during the interval may be judged by transferring its given position to the above diagram, and estimating its motion during the elapsed interval on the above diagram of the orbits, by means of the following table of the periods:—

MEAN SYNODIC PERIODS OF THE SATELLITES.

	d	h	m	s		d
I.	1	18	28	35.945	=	1.76986048
II.	3	13	17	53.735	=	3.55409416
III.	7	3	59	35.854	=	7.16638720
IV.	16	18	5	6.928	=	16.75355241

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I.

		h	m			h	m			h	m			h	m
Jan.	1	22	35.8	March	22	14	13.8	July	29	21	4.1	Oct.	15	18	15.2
	3	17	3.0		24	8	44.0		31	15	34.0		17	12	42.8
	5	11	30.5		26	3	14.0	Aug.	2	10	3.8		19	7	10.4
	7	5	57.9		27	21	44.1		4	4	33.5		21	1	37.9
	9	0	25.1		29	16	14.1		5	23	3.2		22	20	5.2
	10	18	53.1		31	10	44.3		7	17	32.9		24	14	32.7
	12	13	20.9	April	2	5	14.4		9	12	2.6		26	9	0.0
	14	7	48.6		3	23	44.6		11	6	32.2		28	3	27.2
	16	2	16.5		5	18	14.7		13	1	1.8		29	21	54.2
	17	20	44.4		7	12	45.0		14	19	31.3		31	16	21.2
	19	15	12.5		9	7	15.2		16	14	0.8	Nov.	2	10	48.1
	21	9	40.5		11	1	45.5		18	8	30.2		4	5	15.1
	23	4	8.8		12	20	15.8		20	2	59.2		5	23	41.9
	24	22	37.0		14	14	46.1		21	21	29.2		7	18	8.8
	26	17	5.3		16	9	16.4		23	15	58.5		9	12	35.5
	28	11	33.7		18	3	46.8		25	10	27.8		11	7	2.2
	30	6	2.3		19	22	17.2		27	4	57.1		13	1	28.8
Feb.	1	0	30.8		21	16	47.6		28	23	26.3		14	19	55.5
	2	18	59.4		23	11	17.9		30	17	55.4		16	14	21.8
	4	13	28.0		25	5	48.3	Sept.	1	12	24.6		18	8	48.2
	6	7	56.9		27	0	18.6		3	6	53.7		20	3	14.5
	8	2	25.7		28	18	49.1		5	1	22.8		21	21	40.8
	9	20	54.6		30	13	19.5		6	19	51.7		23	16	7.1
	11	15	23.4	May	2	7	50.0		8	14	20.7		25	10	33.4
	13	9	52.5		4	2	20.4		10	8	49.5		27	4	59.4
	15	4	21.7		5	20	50.9		12	3	18.4		28	23	25.6
	16	22	50.9		7	15	21.2		13	21	47.3		30	17	51.7
	18	17	20.0						15	16	16.0	Dec.	2	12	17.7
	20	11	49.3						17	10	44.7		4	6	43.8
	22	6	18.5	July	1	13	3.3		19	5	13.2		6	1	9.8
	24	0	47.9		3	7	33.5		20	23	41.8		7	19	35.7
	25	19	17.3		5	2	3.7		22	18	10.3		9	14	1.8
	27	13	46.8		6	20	33.9		24	12	38.8		11	8	27.6
March	1	8	16.3		8	15	4.1		26	7	7.2		13	2	53.6
	3	2	45.9		10	9	34.3		28	1	35.4		14	21	19.4
	4	21	15.4		12	4	4.3		29	20	3.7		16	15	45.5
	6	15	45.1		13	22	34.4	Oct.	1	14	31.8		18	10	11.3
	8	10	14.8		15	17	4.5		3	9	0.0		20	4	37.3
	10	4	44.6		17	11	34.5		5	3	28.2		21	23	3.2
	11	23	14.2		19	6	4.6		6	21	56.2		23	17	29.1
	13	17	44.1		21	0	34.6		8	16	24.2		25	11	54.9
	15	12	13.9		22	19	4.5		10	10	52.1		27	6	20.9
	17	6	43.9		24	13	34.5		12	5	19.8		29	0	46.7
	19	1	13.7		26	8	4.4		13	23	47.5		30	19	12.7
	20	19	43.8		28	2	34.3								

WASHINGTON MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE II.

		h m			h m			h m			h m
Jan.	2	19 28.9	March	25	13 19.3	July	31	16 29.4	Oct.	17	21 51.9
	6	8 40.4		29	2 42.4	Aug.	4	5 53.1		21	11 5.7
	9	21 52.6	April	1	16 5.9		7	19 17.7		25	0 19.5
	13	11 5.5		5	5 29.5		11	8 40.9		28	13 32.1
	17	0 19.0		8	18 53.6		14	22 4.7	Nov.	1	2 44.6
	20	13 33.2		12	8 17.7		18	11 27.3		4	15 55.9
	24	2 48.1		15	21 42.3		22	0 50.6		8	5 7.2
	27	16 3.4		19	11 6.7		25	14 12.4		11	18 17.5
	31	5 19.6		23	0 31.8		29	3 34.8		15	7 27.6
Feb.	3	18 35.9		26	13 56.5	Sept.	1	16 55.9		18	20 36.7
	7	7 52.9		30	3 22.1		5	6 17.5		22	9 45.6
	10	21 10.6	May	3	16 47.1		8	19 37.7		25	22 53.7
	14	10 28.9		7	6 13.0		12	8 58.5		29	12 1.8
	17	23 47.6					15	22 17.7	Dec.	3	1 9.2
	21	13 6.8	July	3	5 8.6		19	11 37.5		6	14 16.4
	25	2 26.4		6	18 33.7		23	0 55.9		10	3 23.2
	28	15 46.6		10	7 59.8		26	14 14.5		13	16 30.0
March	4	5 7.2		13	21 24.7		30	3 31.8		17	5 36.7
	7	18 28.3		17	10 50.4	Oct.	3	16 49.3		20	18 43.3
	11	7 49.7		21	0 14.9		7	6 5.4		24	7 49.9
	14	21 11.5		24	13 40.4		10	19 21.7		27	20 56.6
	18	10 33.8		28	3 4.5		14	8 36.8		31	10 3.7
	21	23 56.3									

SATELLITE III.

		h m			h m			h m			h m
Jan.	6	8 34.4	March	26	4 59.6	Aug.	2	13 14.7	Oct.	20	10 18.5
	13	12 14.8	April	2	9 22.5		9	17 35.2		27	14 0.0
	20	15 59.1		9	13 46.7		16	21 54.0	Nov.	3	17 36.5
	27	19 49.3		16	18 12.6		24	2 10.4		10	21 8.1
Feb.	3	23 44.4		23	22 39.4		31	6 24.6		18	0 35.3
	11	3 44.7	May	1	3 7.3	Sept.	7	10 35.1		25	3 59.0
	18	7 48.7					14	14 42.3	Dec.	2	7 19.0
	25	11 56.7	July	4	19 33.6		21	18 45.5		9	10 37.1
March	4	16 7.9		12	0 1.4		28	22 45.0		16	13 52.6
	11	20 22.1		19	4 27.5	Oct.	6	2 40.5		23	17 7.8
	19	0 39.6		26	8 52.1		13	6 31.5		30	20 22.4

SATELLITE IV.

		h m			h m			h m			h m
Jan.	12	17 38.5	April	6	15 11.9	Aug.	2	16 21.6	Oct.	25	13 21.6
	29	10 37.1		23	11 43.6		19	12 21.4	Nov.	11	5 14.1
Feb.	15	4 36.4				Sept.	5	7 48.4		27	20 9.4
March	3	23 29.0					22	2 33.8	Dec.	14	10 24.0
	20	19 3.5	July	16	19 57.1	Oct.	8	20 27.1		31	0 25.3

WASHINGTON MEAN TIME.

JANUARY.

d	h	m	s			
1	0	15		I.	Tr.	In.
	1	16		I.	Sh.	In.
	1	45		II.	Sh.	In.
	2	6		II.	Tr.	Eg.
	2	28		I.	Tr.	Eg.
	3	29		I.	Sh.	Eg.
	4	6		II.	Sh.	Eg.
	21	30		I.	Oc.	Dis.
2	0	41	30.7	I.	Ec.	Re.
	18	2		III.	Tr.	In.
	18	19		II.	Oc.	Dis.
	18	43		I.	Tr.	In.
	19	45		I.	Sh.	In.
	19	49		III.	Tr.	Eg.
	20	55		I.	Tr.	Eg.
	21	58		I.	Sh.	Eg.
	22	11		III.	Sh.	In.
	22	38	57.6	II.	Ec.	Re.
3	0	3		III.	Sh.	Eg.
	15	57		I.	Oc.	Dis.
	19	10	24.5	I.	Ec.	Re.
4	12	59		II. *	Tr.	In.
	13	10		I. *	Tr.	In.
	14	14		I. *	Sh.	In.
	15	5		II.	Sh.	In.
	15	20		II.	Tr.	Eg.
	15	22		I.	Tr.	Eg.
	16	26		I.	Sh.	Eg.
	17	26		II.	Sh.	Eg.
5	10	24		I. *	Oc.	Dis.
	13	39	25.5	I. *	Ec.	Re.
6	7	30		II. *	Oc.	Dis.
	7	38		I. *	Tr.	In.
	7	40		III. *	Oc.	Dis.
	8	43		I. *	Sh.	In.
	9	29		III. *	Oc.	Re.
	9	50		I. *	Tr.	Eg.
	10	55		I. *	Sh.	Eg.
	11	56	48.7	II. *	Ec.	Re.
	12	10	16.5	III. *	Ec.	Dis.
	13	48	43.7	III. *	Ec.	Re.
7	4	52		I.	Oc.	Dis.
	8	8	18.5	I. *	Ec.	Re.
8	2	5		I.	Tr.	In.
	2	13		II.	Tr.	In.
	3	11		I.	Sh.	In.
	4	17		I.	Tr.	Eg.
	4	24		II.	Sh.	In.
	4	34		II.	Tr.	Eg.
	5	24		I. *	Sh.	Eg.
	6	46		II. *	Sh.	Eg.
	23	19		I.	Oc.	Dis.
9	2	37	19.6	I.	Ec.	Re.
	20	32		I.	Tr.	In.
	20	42		II.	Oc.	Dis.
	21	39		III.	Tr.	In.
	21	40		I.	Sh.	In.
	22	44		I.	Tr.	Eg.
	23	29		III.	Tr.	Eg.
	23	53		I.	Sh.	Eg.
10	1	14	42.1	II.	Ec.	Re.
	2	13		III.	Sh.	In.
	4	5		III.	Sh.	Eg.
	17	47		I.	Oc.	Dis.
	21	6	14.9	I.	Ec.	Re.
11	15	0		I.	Tr.	In.
	15	27		II.	Tr.	In.
	16	9		I.	Sh.	In.
	17	12		I.	Tr.	Eg.
	17	44		II.	Sh.	In.
11	17	48		II.	Tr.	Eg.
	18	22		I.	Sh.	Eg.
	20	5		II.	Sh.	Eg.
12	12	15		I. *	Oc.	Dis.
	15	35	16.7	I.	Ec.	Re.
13	9	27		I. *	Tr.	In.
	9	55		II. *	Oc.	Dis.
	10	38		I. *	Sh.	In.
	11	19		III. *	Oc.	Dis.
	11	40		I. *	Tr.	Eg.
	12	17		II. *	Oc.	Re.
	12	17	36.0	II. *	Ec.	Dis.
	12	50		I. *	Sh.	Eg.
	13	11		III. *	Oc.	Re.
	14	32	36.2	II.	Ec.	Re.
	16	11	22.6	III.	Ec.	Dis.
	17	50	48.8	III.	Ec.	Re.
14	6	42		I. *	Oc.	Dis.
	10	4	10.3	I. *	Ec.	Re.
15	3	55		I.	Tr.	In.
	4	41		II.	Tr.	In.
	5	6		I.	Sh.	In.
	6	7		I. *	Tr.	Eg.
	7	3		II. *	Tr.	Eg.
	7	3		II. *	Sh.	In.
	7	19		I. *	Sh.	Eg.
	9	25		II. *	Sh.	Eg.
16	1	10		I.	Oc.	Dis.
	4	33	11.6	I.	Ec.	Re.
	22	22		I.	Tr.	In.
	23	8		II.	Oc.	Dis.
	23	35		I.	Sh.	In.
17	0	35		I.	Tr.	Eg.
	1	18		III.	Tr.	In.
	1	30		II.	Oc.	Re.
	1	35	27.1	II.	Ec.	Dis.
	1	48		I.	Sh.	Eg.
	3	13		III.	Tr.	Eg.
	3	50	33.1	II.	Ec.	Re.
	6	14		III. *	Sh.	In.
	8	7		III. *	Sh.	Eg.
	19	38		I.	Oc.	Dis.
	23	2	7.4	I.	Ec.	Re.
18	16	50		I.	Tr.	In.
	17	57		II.	Tr.	In.
	18	4		I.	Sh.	In.
	19	3		I.	Tr.	Eg.
	20	17		I.	Sh.	Eg.
	20	19		II.	Tr.	Eg.
	20	23		II.	Sh.	In.
	22	44		II.	Sh.	Eg.
19	14	6		I.	Oc.	Dis.
	17	31	9.6	I.	Ec.	Re.
20	11	18		I. *	Tr.	In.
	12	22		II. *	Oc.	Dis.
	12	33		I. *	Sh.	In.
	13	31		I. *	Tr.	Eg.
	14	44		II.	Oc.	Re.
	14	45		I.	Sh.	Eg.
	14	53	18.0	II.	Ec.	Dis.
	15	1		III.	Oc.	Dis.
	16	57		III.	Oc.	Re.
	17	8	30.0	II.	Ec.	Re.
	20	12	23.7	III.	Ec.	Dis.
	21	52	51.3	III.	Ec.	Re.
21	8	34		I. *	Oc.	Dis.
	12	0	3.7	I. *	Ec.	Re.
22	5	46		I. *	Tr.	In.
	7	2		I. *	Sh.	In.
22	7	13		II. *	Tr.	In.
	7	59		I. *	Tr.	Eg.
	9	14		I. *	Sh.	Eg.
	9	35		II. *	Tr.	Eg.
	9	42		II. *	Sh.	In.
	12	4		II. *	Sh.	Eg.
23	3	2		I.	Oc.	Dis.
	6	29	5.2	I. *	Ec.	Re.
24	0	14		I.	Tr.	In.
	1	30		I.	Sh.	In.
	1	37		II.	Oc.	Dis.
	2	27		I.	Tr.	Eg.
	3	43		I.	Sh.	Eg.
	4	0		II.	Oc.	Re.
	4	11	1.0	II.	Ec.	Dis.
	5	4		III.	Tr.	In.
	6	26	30.2	II. *	Ec.	Re.
	7	1		III. *	Tr.	Eg.
	10	15		III. *	Sh.	In.
	12	10		III. *	Sh.	Eg.
	21	31		I.	Oc.	Dis.
25	0	58	1.6	I.	Ec.	Re.
	18	42		I.	Tr.	In.
	19	59		I.	Sh.	In.
	20	29		II.	Tr.	In.
	20	55		I.	Tr.	Eg.
	22	12		I.	Sh.	Eg.
	22	52		II.	Tr.	Eg.
	23	1		II.	Sh.	In.
26	1	23		II.	Sh.	Eg.
	15	59		I.	Oc.	Dis.
	19	27	5.9	I.	Ec.	Re.
27	13	11		I. *	Tr.	In.
	14	28		I.	Sh.	In.
	14	52		II.	Oc.	Dis.
	15	23		I.	Tr.	Eg.
	16	41		I.	Sh.	Eg.
	17	15		II.	Oc.	Re.
	17	29	5.5	II.	Ec.	Dis.
	18	50		III.	Oc.	Dis.
	19	44	30.1	II.	Ec.	Re.
	20	49		III.	Oc.	Re.
28	0	13	39.7	III.	Ec.	Dis.
	1	55	9.9	III.	Ec.	Re.
	10	27		I. *	Oc.	Dis.
	13	55	58.2	I.	Ec.	Re.
29	7	39		I. *	Tr.	In.
	8	57		I. *	Sh.	In.
	9	46		II. *	Tr.	In.
	9	51		I. *	Tr.	Eg.
	11	10		I. *	Sh.	Eg.
	12	9		II. *	Tr.	Eg.
	12	21		II. *	Sh.	In.
	14	42		II.	Sh.	Eg.
30	4	56		I.	Oc.	Dis.
	8	24	59.8	I. *	Ec.	Re.
31	2	8		I.	Tr.	In.
	3	26		I.	Sh.	In.
	4	8		II.	Oc.	Dis.
	4	20		I.	Tr.	Eg.
	5	38		I.	Sh.	Eg.
	6	31		II. *	Oc.	Re.
	6	47	2.0	II. *	Ec.	Dis.
	8	55		III. *	Tr.	In.
	9	2	33.2	II. *	Ec.	Re.
	10	55		III. *	Tr.	Eg.
	14	16		III.	Sh.	In.
	16	11		III.	Sh.	Eg.
	23	24		I.	Oc.	Dis.

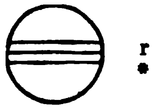
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

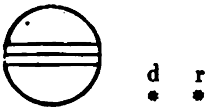
JANUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

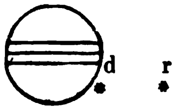
I.



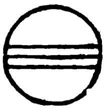
III.



II.



IV.



No Eclipse.

Configurations at 10ʰ for an Inverting Telescope.

Day.	West.		East.
1	2· 1·	○	3· 4·
2	·2	○	3·1· 4·
3	3· ·1	○	4· ·2
4	3·	4·· ○	2· 1·
5	2· 4· ·3	·1○	
6	4·	1·○·3	·2●
7	4·	○	·1 2· ·3
8	4· 1·2·	○	3·
9	·4 ·2	○	3· ·1
10	·4 2· ·1	○	·2
11	3· ·4	○	2· 1·
12	·3 2· ·1 ·4	○	
13	○ 1·	·3○	·4 ·2●
14		○	2· ·3 ·4 ·1●
15	1·2·	○	3· ·4
16	·2	○	·1 3· ·4
17	1· 3·	○	·2 4·
18	3·	○	1·2· 4·
19	·3 2· ·1	○	4·
20	·3·2	○	1· 4·
21	4·	○	2 ·3 ·1●
22	4· 1·2·	○	·3
23	4· ·2	○	·1 3·
24	4· 1· 3·	○	·2
25	·4 3·	○	1·2·
26	·4 ·3 2· ·1	○	
27	·4 ·3·2	○	1·
28	·4	·1○	·3 ·2
29	○ 2·	1·○ ·4	·3
30	·2	○	·1 ·4 3·
31	○ 3· 1·	.○	·2 ·4.

WASHINGTON MEAN TIME.

FEBRUARY.

d	h	m	s			
1	2	53	56 2	I.	Ec.	Re.
	20	36		I.	Tr.	In.
	21	54		I.	Sh.	In.
	22	48		I.	Tr.	Eg.
	23	4		II.	Tr.	In.
2	0	7		I.	Sh.	Eg.
	1	27		II.	Tr.	Eg.
	1	40		II.	Sh.	In.
	4	2		II.	Sh.	Eg.
	17	53		I.	Oc.	Dis.
	21	22	58.6	I.	Ec.	Re.
3	15	5		I.	Tr.	In.
	16	23		I.	Sh.	In.
	17	17		I.	Tr.	Eg.
	17	24		II.	Oc.	Dis.
	18	36		I.	Sh.	Eg.
	19	48		II.	Oc.	Re.
	20	4	58.5	II.	Ec.	Dis.
	22	20	36.5	II.	Ec.	Re.
	22	41		III.	Oc.	Dis.
4	0	45		III.	Oc.	Re.
	4	14	58.9	III.	Ec.	Dis.
	5	57	33.3	III. *	Ec.	Re.
	12	22		I. *	Oc.	Dis.
	15	51	53.0	I.	Ec.	Re.
5	9	33		I. *	Tr.	In.
	10	52		I. *	Sh.	In.
	11	45		I. *	Tr.	Eg.
	12	21		II. *	Tr.	In.
	13	5		I.	Sh.	Eg.
	14	45		II.	Tr.	Eg.
	14	59		II.	Sh.	In.
	17	21		II.	Sh.	Eg.
6	6	50		I. *	Oc.	Dis.
	10	20	54.4	I. *	Ec.	Re.
7	4	2		I.	Tr.	In.
	5	21		I.	Sh.	In.
	6	14		I. *	Tr.	Eg.
	6	41		II. *	Oc.	Dis.
	7	34		I. *	Sh.	Eg.
	9	5		II. *	Oc.	Re.
	9	22	57.0	II. *	Ec.	Dis.
	11	38	42.2	II. *	Ec.	Re.
	12	51		III.	Tr.	In.
	14	53		III.	Tr.	Eg.
	18	16		III.	Sh.	In.
	20	13		III.	Sh.	Eg.
8	1	19		I.	Oc.	Dis.
	4	49	50.6	I.	Ec.	Re.
	22	30		I.	Tr.	In.
	23	50		I.	Sh.	In.
9	0	43		I.	Tr.	Eg.
	1	40		II.	Tr.	In.
	2	3		I.	Sh.	Eg.
	4	4		II.	Tr.	Eg.
	4	18		II.	Sh.	In.
	6	41		II. *	Sh.	Eg.
	19	48		I.	Oc.	Dis.
	23	18	52.6	I.	Ec.	Re.
10	16	59		I.	Tr.	In.
	18	18		I.	Sh.	In.
	19	12		I.	Tr.	Eg.
	19	59		II.	Oc.	Dis
10	20	32		I.	Sh.	Eg.
	22	23		II.	Oc.	Re.
	22	40	56.2	II.	Ec.	Dis.
11	0	56	48.8	II.	Ec.	Re.
	2	43		III.	Oc.	Dis
	4	46		III.	Oc.	Re.
	8	16	53.7	III. *	Ec.	Dis.
	10	0	34.7	III. *	Ec.	Re.
	14	17		I.	Oc.	Dis.
	17	47	46.8	I.	Ec.	Re.
12	11	28		I. *	Tr.	In.
	12	47		I.	Sh.	In.
	13	41		I.	Tr.	Eg.
	14	59		II.	Tr.	In.
	15	0		I.	Sh.	Eg.
	17	23		II.	Tr.	Eg.
	17	38		II.	Sh.	In.
	20	0		II.	Sh.	Eg.
13	8	46		I. *	Oc.	Dis.
	12	16	47.5	I.	Ec.	Re.
14	5	56		I.	Tr.	In.
	7	16		I. *	Sh.	In.
	8	10		I. *	Tr.	Eg.
	9	17		II. *	Oc.	Dis.
	9	29		I. *	Sh.	Eg.
	11	41		II. *	Oc.	Re.
	11	58	57.1	II. *	Ec.	Dis.
	14	14	57.3	II.	Ec.	Re.
	16	51		III.	Tr.	In.
	18	55		III.	Tr.	Eg.
	22	17		III.	Sh.	In.
15	0	15		III.	Sh.	Eg.
	3	15		I.	Oc.	Dis.
	6	45	43.3	I. *	Ec.	Re.
16	0	25		I.	Tr.	In.
	1	45		I.	Sh.	In.
	2	39		I.	Tr.	Eg.
	3	58		I.	Sh.	Eg.
	4	18		II.	Tr.	In.
	6	43		II. *	Tr.	Eg.
	6	57		II. *	Sh.	In.
	9	19		II. *	Sh.	Eg.
	21	44		I.	Oc.	Dis.
17	1	14	44.9	I.	Ec.	Re.
	18	54		I.	Tr.	In.
	20	14		I.	Sh.	In.
	21	8		I.	Tr.	Eg.
	22	27		I.	Sh.	Eg.
	22	36		II.	Oc.	Dis.
18	1	0		II.	Oc.	Re.
	1	16	59.3	II.	Ec.	Dis.
	3	33	7.5	II.	Ec.	Re.
	6	46		III. *	Oc.	Dis.
	8	51		III. *	Oc.	Re.
	12	18	13.4	III.	Ec.	Dis.
	14	3	2.4	III.	Ec.	Re.
	16	14		I.	Oc.	Dis.
	19	43	38.7	I.	Ec.	Re.
19	13	23		I.	Tr.	In.
	14	43		I.	Sh.	In.
	15	37		I.	Tr.	Eg.
	16	56		I.	Sh.	Eg.
19	17	38		II.	Tr.	In.
	20	3		II.	Tr.	Eg.
	20	16		II.	Sh.	In.
	22	38		II.	Sh.	Eg.
20	10	43		I. *	Oc.	Dis.
	14	12	38.8	I.	Ec.	Re.
21	7	52		I. *	Tr.	In.
	9	11		I. *	Sh.	In.
	10	6		I. *	Tr.	Eg.
	11	25		I. *	Sh.	Eg.
	11	55		II.	Oc.	Dis.
	14	19		II.	Oc.	Re.
	14	35	2.2	II.	Ec.	Dis.
	16	51	18.6	II.	Ec.	Re.
	20	56		III.	Tr.	In.
	23	2		III.	Tr.	Eg.
22	2	18		III.	Sh.	In.
	4	17		III.	Sh.	Eg.
	5	12		I.	Oc.	Dis.
	8	41	33.8	I. *	Ec.	Re.
23	2	22		I.	Tr.	In.
	3	40		I.	Sh.	In.
	4	35		I.	Tr.	Eg.
	5	54		I.	Sh.	Eg.
	6	59		II. *	Tr.	In.
	9	23		II. *	Tr.	Eg.
	9	35		II. *	Sh.	In.
	11	58		II.	Sh.	Eg.
	23	41		I.	Oc.	Dis.
24	3	10	34.6	I.	Ec.	Re.
	20	51		I.	Tr.	In.
	22	9		I.	Sh.	In.
	23	4		I.	Tr.	Eg.
25	0	22		I.	Sh.	Eg.
	1	14		II.	Oc.	Dis.
	3	39		II.	Oc.	Re.
	3	53	8.0	II.	Ec.	Dis.
	6	9	32.7	II. *	Ec.	Re.
	10	53		III. *	Oc.	Dis.
	13	0		III.	Oc.	Re.
	16	19	38.2	III.	Ec.	Dis.
	18	5	35.4	III.	Ec.	Re.
	18	11		I.	Oc.	Dis.
	21	39	27.9	I.	Ec.	Re.
26	15	20		I.	Tr.	In.
	16	38		I.	Sh.	In.
	17	34		I.	Tr.	Eg.
	18	51		I.	Sh.	Eg.
	20	19		II.	Tr.	In.
	22	44		II.	Tr.	Eg.
	22	54		II.	Sh.	In.
27	1	17		II.	Sh.	Eg.
	12	40		I.	Oc.	Dis.
	16	8	27.1	I.	Ec.	Re.
28	9	50		I. *	Tr.	In.
	11	7		I. *	Sh.	In.
	12	3		I.	Tr.	Eg.
	13	20		I.	Sh.	Eg.
	14	34		II.	Oc.	Dis.
	16	59		II.	Oc.	Re.
	17	11	12.8	II.	Ec.	Dis.
	19	27	46.2	II.	Ec.	Re.

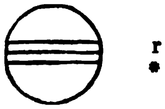
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

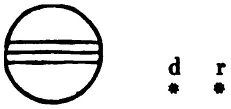
FEBRUARY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

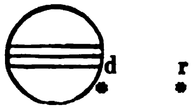
I.



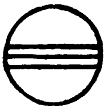
III.



II.



IV.



No Eclipse.

Configurations at 9ʰ for an Inverting Telescope.

Day.	West.		East.
1	3·	○	·1 2· ·4
2	·3 2· ·1	○	·4
3	·3 ·2	○	1· 4·
4	·1	○	·3 ·2 4·
5		○	1·2· 4· ·3
6	2·	○	4· 3· ·1 ●
7	4· 1·	○	3· ·2 ●
8	4· 3·	○	·1 2·
9	4· ·3 1·2·	○	
10	4· ·3 ·2	○	1·
11	·4 ·1	○	·2 ·3 ●
12	·4	○	1· 2· ·3
13	·4 2·	○	3· ·1 ●
14	·4 1· ·2	○	3·
15	3·	○	·4 ·1 2·
16	3· 1· 2·	○	·4
17	·3 ·2	○	·1 ·4
18	·1	○	·3 ·2 ·4
19		○	1· 2· ·3 ·4
20	2· ·1	○	3· 4·
21	○ 1· ·2	○	3· 4·
22	3·	○	·1 ·2 4·
23	○ 2· 3· 1·	○	4·
24	·3 ·2 4·	○	·1
25	4· ·1 ·3	○	·2
26	4·	○	1· 2· ·3
27	4· 2· ·1	○	3·
28	·4 ·2	○	1· 3·

WASHINGTON MEAN TIME.

MARCH.

d	h	m	s			
1	1	5		III.	Tr.	In.
	3	13		III.	Tr.	Eg.
	6	20		III.	*Sh.	In.
	7	10		I.	*Oc.	Dis.
	8	20		III.	*Sh.	Eg.
	10	37	21.4	I.	*Ec.	Re.
2	4	19		I.	Tr.	In.
	5	36		I.	Sh.	In.
	6	33		I.	*Tr.	Eg.
	7	49		I.	*Sh.	Eg.
	9	40		II.	*Tr.	In.
	12	5		II.	Tr.	Eg.
	12	13		II.	Sh.	In.
	14	36		II.	Sh.	Eg.
3	1	39		I.	Oc.	Dis.
	5	6	21.3	I.	Ec.	Re.
	22	49		I.	Tr.	In.
4	0	4		I.	Sh.	In.
	1	2		I.	Tr.	Eg.
	2	18		I.	Sh.	Eg.
	3	55		II.	Oc.	Dis.
	6	20		II.	Oc.	Re.
	6	29	22.1	II.	*Ec.	Dis.
	8	46	4.1	II.	*Ec.	Re.
	15	4		III.	Oc.	Dis.
	17	12		III.	Oc.	Re.
	20	9		I.	Oc.	Dis.
	20	20	30.4	III.	Ec.	Dis.
	22	7	37.2	III.	Ec.	Re.
	23	35	13.9	I.	Ec.	Re.
5	17	18		I.	Tr.	In.
	18	33		I.	Sh.	In.
	19	32		I.	Tr.	Eg.
	20	47		I.	Sh.	Eg.
	23	2		II.	Tr.	In.
6	1	27		II.	Tr.	Eg.
	1	32		II.	Sh.	In.
	3	55		II.	Sh.	Eg.
	14	38		I.	Oc.	Dis.
	18	4	12.2	I.	Ec.	Re.
7	11	48		I.	Tr.	In.
	13	2		I.	Sh.	In.
	14	1		I.	Tr.	Eg.
	15	15		I.	Sh.	Eg.
	17	16		II.	Oc.	Dis.
	19	41		II.	Oc.	Re.
	19	47	29.0	II.	Ec.	Dis.
	22	4	19.6	II.	Ec.	Re.
8	5	17		III.	Tr.	In.
	7	26		III.	*Tr.	Eg.
	9	8		I.	*Oc.	Dis.
	10	21		III.	*Sh.	In.
	12	22		III.	Sh.	Eg.
	12	33	5.6	I.	Ec.	Re.
9	6	17		I.	Tr.	In.
	7	31		I.	*Sh.	In.
	8	31		I.	*Tr.	Eg.
	9	44		I.	*Sh.	Eg.
	12	24		II.	Tr.	In.
	14	49		II.	Tr.	Eg.
	14	51		II.	Sh.	In.
	17	14		II.	Sh.	Eg.
10	3	38		I.	Oc.	Dis.
	7	2	4.5	I.	*Ec.	Re.
11	0	47		I.	Tr.	In.
	2	0		I.	Sh.	In.
	3	0		I.	Tr.	Eg.
11	4	13		I.	Sh.	Eg.
	6	37		II.	*Oc.	Dis.
	9	2		II.	*Oc.	Re.
	9	5	42.2	II.	*Ec.	Dis.
	11	22	41.6	II.	Ec.	Re.
	19	17		III.	Oc.	Dis.
	21	27		III.	Oc.	Re.
	22	7		I.	Oc.	Dis.
12	0	21	12.9	III.	Ec.	Dis.
	1	30	56.1	I.	Ec.	Re.
	2	9	31.3	III.	Ec.	Re.
	19	17		I.	Tr.	In.
	20	29		I.	Sh.	In.
	21	30		I.	Tr.	Eg.
	22	42		I.	Sh.	Eg.
13	1	46		II.	Tr.	In.
	4	10		II.	Sh.	In.
	4	11		II.	Tr.	Eg.
	6	33		II.	*Sh.	Eg.
	16	37		I.	Oc.	Dis.
	19	59	53.3	I.	Ec.	Re.
14	13	46		I.	Tr.	In.
	14	57		I.	Sh.	In.
	16	0		I.	Tr.	Eg.
	17	11		I.	Sh.	Eg.
	19	59		II.	Oc.	Dis.
	22	24		II.	Oc.	Re.
	22	23	50.5	II.	Ec.	Dis.
15	0	40	59.1	II.	Ec.	Re.
	9	33		III.	*Tr.	In.
	11	7		I.	Oc.	Dis.
	11	43		III.	Tr.	Eg.
	14	22		III.	Sh.	In.
	14	28	45.8	I.	Ec.	Re.
	16	24		III.	Sh.	Eg.
16	8	16		I.	*Tr.	In.
	9	26		I.	*Sh.	In.
	10	30		I.	*Tr.	Eg.
	11	40		I.	Sh.	Eg.
	15	8		II.	Tr.	In.
	17	28		II.	Sh.	In.
	17	34		II.	Tr.	Eg.
	19	52		II.	Sh.	Eg.
17	5	37		I.	Oc.	Dis.
	8	57	43.4	I.	*Ec.	Re.
18	2	46		I.	Tr.	In.
	3	55		I.	Sh.	In.
	5	0		I.	Tr.	Eg.
	6	8		I.	Sh.	Eg.
	9	21		II.	*Oc.	Dis.
	13	59	24.6	II.	Ec.	Re.
	23	34		III.	Oc.	Dis.
19	0	7		I.	Oc.	Dis.
	1	45		III.	Oc.	Re.
	3	26	33.9	I.	Ec.	Re.
	4	22	7.0	III.	Ec.	Dis.
	6	11	38.6	III.	Ec.	Re.
	21	16		I.	Tr.	In.
	22	24		I.	Sh.	In.
	23	30		I.	Tr.	Eg.
20	0	37		I.	Sh.	Eg.
	4	31		II.	Tr.	In.
	6	47		II.	*Sh.	In.
	6	57		II.	*Tr.	Eg.
	9	11		II.	*Sh.	Eg.
	18	37		I.	Oc.	Dis.
	21	55	29.4	I.	Ec.	Re.
21	15	46		I.	Tr.	In.
	16	53		I.	Sh.	In.
	18	0		I.	Tr.	Eg.
	19	6		I.	Sh.	Eg.
	22	43		II.	Oc.	Dis.
22	3	17	44.7	II.	Ec.	Re.
	13	7		I.	Oc.	Dis.
	13	50		III.	Tr.	In.
	16	1		III.	Tr.	Eg.
	16	24	20.9	I.	Ec.	Re.
	18	22		III.	Sh.	In.
	20	25		III.	Sh.	Eg.
23	10	16		I.	Tr.	In.
	11	22		I.	Sh.	In.
	12	30		I.	Tr.	Eg.
	13	35		I.	Sh.	Eg.
	17	55		II.	Tr.	In.
	20	6		II.	Sh.	In.
	20	21		II.	Tr.	Eg.
	22	30		II.	Sh.	Eg.
24	7	37		I.	*Oc.	Dis.
	10	53	17.3	I.	Ec.	Re.
25	4	46		I.	Tr.	In.
	5	50		I.	Sh.	In.
	7	0		I.	*Tr.	Eg.
	8	4		I.	*Sh.	Eg.
	12	6		II.	Oc.	Dis.
	16	36	16.1	II.	Ec.	Re.
26	2	7		I.	Oc.	Dis.
	3	54		III.	Oc.	Dis.
	5	22	6.6	I.	Ec.	Re.
	6	6		III.	Oc.	Re.
	8	22	57.3	III.	*Ec.	Dis.
	10	13	43.3	III.	Ec.	Re.
	23	16		I.	Tr.	In.
27	0	19		I.	Sh.	In.
	1	30		I.	Tr.	Eg.
	2	32		I.	Sh.	Eg.
	7	18		II.	*Tr.	In.
	9	25		II.	*Sh.	In.
	9	44		II.	*Tr.	Eg.
	11	49		II.	Sh.	Eg.
	20	37		I.	Oc.	Dis.
	23	51	0.4	I.	Ec.	Re.
28	17	46		I.	Tr.	In.
	18	48		I.	Sh.	In.
	20	0		I.	Tr.	Eg.
	21	1		I.	Sh.	Eg.
29	1	29		II.	Oc.	Dis.
	5	54	36.3	II.	Ec.	Re.
	15	7		I.	Oc.	Dis.
	18	10		III.	Tr.	In.
	18	19	50.3	I.	Ec.	Re.
	20	22		III.	Tr.	Eg.
	22	23		III.	Sh.	In.
30	0	27		III.	Sh.	Eg.
	12	16		I.	Tr.	In.
	13	17		I.	Sh.	In.
	14	30		I.	Tr.	Eg.
	15	30		I.	Sh.	Eg.
	20	42		II.	Tr.	In.
	22	44		II.	Sh.	In.
	23	8		II.	Tr.	Eg.
31	1	8		II.	Sh.	Eg.
	9	37		I.	*Oc.	Dis.
	12	48	45.2	I.	Ec.	Re.

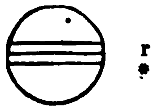
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

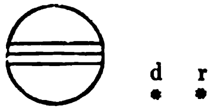
MARCH.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

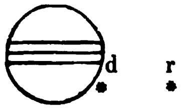
I.



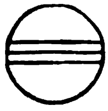
III.



II.



IV.



No Eclipse.

Configurations at 8ʰ for an Inverting Telescope.

Day.	West.		East.
1	·4 3·	○	·2 ·1 ●
2	·43· 1·	○	2·
3	·3 ·2 ·4	○	·1
4	1· ·3	○	·4 ·2 ●
5		○	1· 2· ·3 ·4
6	2· ·1	○	·3 ·4
7	·2	○	1· 3· ·4
8	3· ·1	○	·2 4·
9	○ 1· 3·	○	2· 4·
10	·3 2·	○	·1 4·
11	·31·	○	4· ·2 ●
12	4·	○	·1 ·3 2·
13	4· ·12·	○	·3
14	4· ·2	○	1· 3·
15	4· ·1	○	3· ·2
16	4· 3·	○	1· 2·
17	·4 ·3 2·	○	·1 ●
18	·4 ·3 1· ·2	○	
19	·4	○	·3·1 2·
20	1· ·4 2·	○	·3
21	·2	○	1· ·4 3·
22	·1	○	3· ·2 ·4
23	3·	○	1· 2· ·4
24	3· 2·	○	·4 ·1 ●
25	·3 ·21·	○	4·
26		○	·3 ·1 ·2 4·
27	○ 2· 1·	○	·3 4·
28	·2	○	·1 4· 3·
29	·1 4·	○	·2 3·
30	4· 3·	○	1· 2·
31	4· 3· 2· ·1	○	

WASHINGTON MEAN TIME.

APRIL.

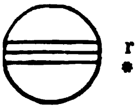
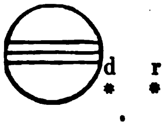
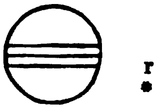
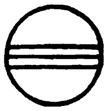
d	h	m	s				d	h	m	s				d	h	m	s			
1	6	46		I.	Tr.	In.	10	15	20		II.	Tr.	Eg.	20	19	3		I.	Sh.	In.
	7	46		I. *	Sh.	In.		17	3		II.	Sh.	Eg.		20	33		I.	Tr.	Eg.
	9	0		I. *	Tr.	Eg.	11	0	39		I.	Oc.	Dis.		21	16		I.	Sh.	Eg.
	9	59		I.	Sh.	Eg.		3	41	45.0	I.	Ec.	Re.	21	5	7		II.	Tr.	In.
	14	53		II.	Oc.	Dis.		21	48		I.	Tr.	In.		6	34		II.	Sh.	In.
	19	13	12.4	II.	Ec.	Re.		22	39		I.	Sh.	In.		7	33		II. *	Tr.	Eg.
2	4	8		I.	Oc.	Dis.	12	0	1		I.	Tr.	Eg.		8	59		II.	Sh.	Eg.
	7	17	33.4	I. *	Ec.	Re.		0	52		I.	Sh.	Eg.		15	41		I.	Oc.	Dis.
	8	16		III. *	Oc.	Dis.		7	5		II. *	Oc.	Dis.		18	34	33.8	I.	Ec.	Re.
	10	29		III.	Oc.	Re.		11	8	36.0	II.	Ec.	Re.	22	12	49		I.	Tr.	In.
	12	24	19.7	III.	Ec.	Dis.		19	9		I.	Oc.	Dis.		13	31		I.	Sh.	In.
	14	16	20.9	III.	Ec.	Re.		22	10	32.0	I.	Ec.	Re.		15	3		I.	Tr.	Eg.
3	1	17		I.	Tr.	In.	13	2	57		III.	Tr.	In.		15	45		I.	Sh.	Eg.
	2	15		I.	Sh.	In.		5	11		III.	Tr.	Eg.		23	19		II.	Oc.	Dis.
	3	30		I.	Tr.	Eg.		6	23		III.	Sh.	In.	23	3	4	34.0	II.	Ec.	Re.
	4	28		I.	Sh.	Eg.		8	30		III. *	Sh.	Eg.		10	11		I.	Oc.	Dis.
	10	6		II.	Tr.	In.		16	18		I.	Tr.	In.		13	3	17.6	I.	Ec.	Re.
	12	2		II.	Sh.	In.		17	8		I.	Sh.	In.		21	32		III.	Oc.	Dis.
	12	32		II.	Tr.	Eg.		18	31		I.	Tr.	Eg.		23	47		III.	Oc.	Re.
	14	26		II.	Sh.	Eg.		19	21		I.	Sh.	Eg.	24	0	25	52.8	III.	Ec.	Dis.
	22	38		I.	Oc.	Dis.	14	2	18		II.	Tr.	In.		2	21	44.2	III.	Ec.	Re.
4	1	46	25.9	I.	Ec.	Re.		3	57		II.	Sh.	In.		7	20		I. *	Tr.	In.
	19	47		I.	Tr.	In.		4	44		II.	Tr.	Eg.		8	0		I. *	Sh.	In.
	20	43		I.	Sh.	In.		6	22		II.	Sh.	Eg.		9	34		I.	Tr.	Eg.
	22	0		I.	Tr.	Eg.		13	39		I.	Oc.	Dis.		10	14		I.	Sh.	Eg.
	22	57		I.	Sh.	Eg.		16	39	23 7	I.	Ec.	Re.		18	31		II.	Tr.	In.
5	4	17		II.	Oc.	Dis.	15	10	48		I.	Tr.	In.		19	52		II.	Sh.	In.
	8	31	33.5	II. *	Ec.	Re.		11	36		I.	Sh.	In.		20	58		II.	Tr.	Eg.
	17	8		I.	Oc.	Dis.		13	2		I.	Tr.	Eg.		22	17		II.	Sh.	Eg.
	20	15	14.1	I.	Ec.	Re.		13	50		I.	Sh.	Eg.	25	4	41		I.	Oc.	Dis.
	22	33		III.	Tr.	In.		20	29		II.	Oc.	Dis.		7	32	4.8	I. *	Ec.	Re.
6	0	46		III.	Tr.	Eg.	16	0	27	21.5	II.	Ec.	Re.	26	1	50		I.	Tr.	In.
	2	23		III.	Sh.	In.		8	10		I. *	Oc.	Dis.		2	29		I.	Sh.	In.
	4	28		III.	Sh.	Eg.		11	8	9.2	I.	Ec.	Re.		4	4		I.	Tr.	Eg.
	14	17		I.	Tr.	In.		17	5		III.	Oc.	Dis.		4	42		I.	Sh.	Eg.
	15	12		I.	Sh.	In.		19	20		III.	Oc.	Re.		12	43		II.	Oc.	Dis.
	16	30		I.	Tr.	Eg.		20	25	44.8	III.	Ec.	Dis.		16	22	56.6	II.	Ec.	Re.
	17	26		I.	Sh.	Eg.		22	20	18.4	III.	Ec.	Re.		23	12		I.	Oc.	Dis.
	23	30		II.	Tr.	In.	17	5	18		I.	Tr.	In.	27	2	0	48.6	I.	Ec.	Re.
7	1	21		II.	Sh.	In.		6	5		I.	Sh.	In.		11	52		III.	Tr.	In.
	1	56		II.	Tr.	Eg.		7	32		I. *	Tr.	Eg.		14	8		III.	Tr.	Eg.
	3	45		II.	Sh.	Eg.		8	19		I. *	Sh.	Eg.		14	26		III.	Sh.	In.
	11	38		I.	Oc.	Dis.		15	42		II.	Tr.	In.		16	35		III.	Sh.	Eg.
	14	44	7.4	I.	Ec.	Re.		17	16		II.	Sh.	In.		20	21		I.	Tr.	In.
8	8	47		I. *	Tr.	In.		18	9		II.	Tr.	Eg.		20	58		I.	Sh.	In.
	9	41		I.	Sh.	In.		19	40		II.	Sh.	Eg.		22	35		I.	Tr.	Eg.
	11	1		I.	Tr.	Eg.	18	2	40		I.	Oc.	Dis.		23	11		I.	Sh.	Eg.
	11	55		I.	Sh.	Eg.		5	36	58.1	I.	Ec.	Re.	28	7	56		II. *	Tr.	In.
	17	41		II.	Oc.	Dis.		23	49		I.	Tr.	In.		9	10		II.	Sh.	In.
	21	50	14.2	II.	Ec.	Re.	19	0	34		I.	Sh.	In.		10	23		II.	Tr.	Eg.
9	6	8		I.	Oc.	Dis.		2	3		I.	Tr.	Eg.		11	35		II.	Sh.	Eg.
	9	12	54.4	I. *	Ec.	Re.		2	47		I.	Sh.	Eg.		17	42		I.	Oc.	Dis.
	12	40		III.	Oc.	Dis.		9	54		II.	Oc.	Dis.		20	29	37.0	I.	Ec.	Re.
	14	54		III.	Oc.	Re.		13	45	43.9	II.	Ec.	Re.	29	14	51		I.	Tr.	In.
	16	25	2.3	III.	Ec.	Dis.		21	10		I.	Oc.	Dis.		15	26		I.	Sh.	In.
	18	18	19.3	III.	Ec.	Re.	20	0	5	43.5	I.	Ec.	Re.		17	5		I.	Tr.	Eg.
10	3	17		I.	Tr.	In.		7	24		III. *	Tr.	In.		17	40		I.	Sh.	Eg.
	4	10		I.	Sh.	In.		9	40		III.	Tr.	Eg.	30	2	9		II.	Oc.	Dis.
	5	31		I.	Tr.	Eg.		10	26		III.	Sh.	In.		5	41	51.8	II.	Ec.	Re.
	6	23		I.	Sh.	Eg.		12	33		III.	Sh.	Eg.		12	13		I.	Oc.	Dis.
	12	54		II.	Tr.	In.		18	19		I.	Tr.	In.		14	58	19.3	I.	Ec.	Re.
	14	39		II.	Sh.	In.														

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

APRIL.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

I.		III.	
II.		IV.	 No Eclipse.

Configurations at 8ʰ for an Inverting Telescope.

Day.	West.		East.
1	○1· 4· ·3 ·2	○	
2	4·	○$_3$	·1 ·2
3	·4 1·	○	2· ·3
4	·4 2·	○	·1 3·
5	·4 ·1	○	3· ·2 ●
6	3· ·4	○	1· 2·
7	3· 2· ·1	○	·4
8	·3 ·2	○	1· ·4
9	·3	○	·2 ·4 ·1 ●
10	1·	○	2· ·3 ·4
11	2·	○	·1 ·3 4·
12	1·	○	3· 4· ·2 ●
13	3·	○	1· 2· 4·
14	3· $^{2\cdot}_{\cdot 1}$	○	4·
15	·3 ·2 4·	○	1·
16	4· ·3 ·1	○	·2
17	4· 1·	○	2· ·3
18	4· 2·	○	·1 ·3
19	·4 1· ·2	○	3·
20	○3· ·4	○	·1 ·2
21	·4 3· ·1 2·	○	
22	·3 ·4 ·2	○	1·
23	·3 $^{\cdot 1}_{\cdot 4}$	○	·2
24	○1·	○	·3 2· ·4
25	2·	○	·1 ·3 ·4
26	$^{1\cdot}_{\cdot 2}$	○	3· ·4
27		○	3· ·1 ·2 ·4
28	○2· 3· 1·	○	4·
29	3· ·2	○	1· 4·
30	·3 ·1	○	·2 4·

WASHINGTON MEAN TIME.

MAY.

d	h	m	s				d	h	m	s				d	h	m	s			
1	1	59		III.	Oc.	Dis.	3	4	24		I.	Sh.	In.	5	10	46		II.	Tr.	In.
	4	16		III.	Oc.	Re.		6	6		I.	Tr.	Eg.		11	47		II.	Sh.	In.
	4	25	50.7	III.	Ec.	Dis.		6	38		I.	Sh.	Eg.		13	13		II.	Tr.	Eg.
	6	23	0.9	III.	Ec.	Re.		15	34		II.	Oc.	Dis.		14	12		II.	Sh.	Eg.
	9	21		I.	Tr.	In.		19	0	15.2	II.	Ec.	Re.		19	44		I.	Oc.	Dis.
	9	55		I.	Sh.	In.	4	1	13		I.	Oc.	Dis.		22	24	33.4	I.	Ec.	Re.
	11	35		I.	Tr.	Eg.		3	55	46.9	I.	Ec.	Re.	6	16	53		I.	Tr.	In.
	12	9		I.	Sh.	Eg.		16	20		III.	Tr.	In.		17	22		I.	Sh.	In.
	21	21		II.	Tr.	In.		18	27		III.	Sh.	In.		19	7		I.	Tr.	Eg.
	22	29		II.	Sh.	In.		18	37		III.	Tr.	Eg.		19	35		I.	Sh.	Eg.
	23	48		II.	Tr.	Eg.		20	36		III.	Sh.	Eg.	7	5	0		II.	Oc.	Dis.
2	0	54		II.	Sh.	Eg.		22	22		I.	Tr.	In.		8	19	14.3	II.	Ec.	Re.
	6	43		I.	Oc.	Dis.		22	53		I.	Sh.	In.		14	4		I.	Oc.	Dis.
	9	27	4.7	I.	Ec.	Re.	5	0	36		I.	Tr.	Eg.		16	53	14.6	I.	Ec.	Re.
3	3	52		I.	Tr.	In.		1	6		I.	Sh.	Eg.							

THE SATELLITES OF JUPITER

ARE INVISIBLE FROM MAY 8TH UNTIL JULY 1ST,

JUPITER BEING TOO NEAR THE SUN

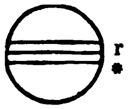
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

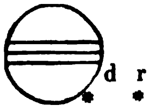
MAY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

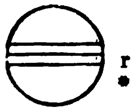
I.



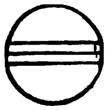
III.



II.



IV.



No Eclipse.

Configurations at 8h for an Inverting Telescope.

Day.	West.		East.
1		○	1··3 4· 2·
2	2· 4·	○	·3 ·1 ●
3	4· ·2 1·	○	3·
4	4·	○	3· ·1 ·2
5	4· 3· 1·	○	2·
6	·4 3· 2·	○	1·
7	·4 ·3 ·1	○	·2 ●

WASHINGTON MEAN TIME.

JULY.

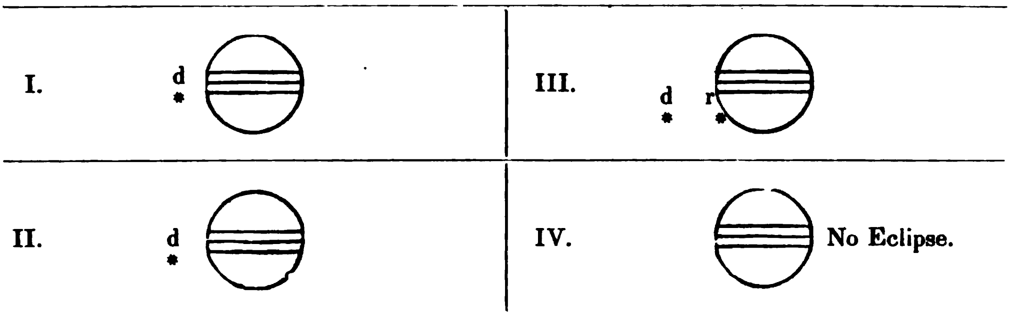
d	h	m	s				d	h	m	s				d	h	m	s			
1	2	27		III.	Sh.	In.	11	22	47		III.	Oc.	Dis.	21	22	56		I.	Tr.	Eg.
	4	14		III.	Tr.	In.	12	0	21		II.	Sh.	In.	22	14	25		III.	Sh.	In.
	4	46		III.	Sh.	Eg.		1	16		III.	Oc.	Re.		16	13		II. *	Sh.	In.
	6	41		III.	Tr.	Eg.		1	37		II.	Tr.	In.		16	48		III.	Sh.	Eg.
	8	29		II.	Sh.	In.		2	21	49.2	I.	Ec.	Dis.		17	12	28.3	I.	Ec.	Dis.
	9	25		II.	Tr.	In.		2	49		II.	Sh.	Eg.		17	32		III.	Tr.	In.
	10	57		II.	Sh.	Eg.		4	8		II.	Tr.	Eg.		17	49		II.	Tr.	In.
	11	55		II.	Tr.	Eg.		5	12		I.	Oc.	Re.		18	42		II.	Sh.	Eg.
2	8	40		I.	Sh.	In.		23	32		I.	Sh.	In.		20	4		III.	Tr.	Eg.
	9	8		I.	Tr.	In.	13	0	10		I.	Tr.	In.		20	12		I.	Oc.	Re.
	10	54		I.	Sh.	Eg.		1	46		I.	Sh.	Eg.		20	20		II.	Tr.	Eg.
	11	23		I.	Tr.	Eg.		2	25		I.	Tr.	Eg.	23	14	23		I. *	Sh.	In.
3	2	56	47.4	II.	Ec.	Dis.		18	51	59.5	II.	Ec.	Dis.		15	11		I.	Tr.	In.
	5	59	27.6	I.	Ec.	Dis.		20	50	15.7	I.	Ec.	Dis.		16	38		I.	Sh.	Eg.
	6	23		II.	Oc.	Re.		22	40		II.	Oc.	Re.		17	26		I.	Tr.	Eg.
	8	41		I.	Oc.	Re.		23	42		I.	Oc.	Re.	24	10	48	11.4	II.	Ec.	Dis.
4	3	9		I.	Sh.	In.	14	18	0		I.	Sh.	In.		11	40	54.1	I.	Ec.	Dis.
	3	39		I.	Tr.	In.		18	40		I.	Tr.	In.		14	42		I. *	Oc.	Re.
	5	23		I.	Sh.	Eg.		20	15		I.	Sh.	Eg.		14	56		II. *	Oc.	Re.
	5	53		I.	Tr.	Eg.		20	55		I.	Tr.	Eg.	25	8	52		I.	Sh.	In.
	16	23	22.4	III.	Ec.	Dis.	15	10	25		III.	Sh.	In.		9	41		I.	Tr.	In.
	20	48		III.	Oc.	Re.		12	47		III.	Sh.	Eg.		11	6		I.	Sh.	Eg.
	21	46		II.	Sh.	In.		13	7		III.	Tr.	In.		11	56		I.	Tr.	Eg.
	22	49		II.	Tr.	In.		13	39		II.	Sh.	In.	26	4	21	15.1	III.	Ec.	Dis.
5	0	14		II.	Sh.	Eg.		15	1		II.	Tr.	In.		5	30		II.	Sh.	In.
	0	27	56.3	I.	Ec.	Dis.		15	18	43.8	I.	Ec.	Dis.		6	9	18.6	I.	Ec.	Dis.
	1	19		II.	Tr.	Eg.		15	38		III.	Tr.	Eg.		6	34	34.1	III.	Ec.	Re.
	3	11		I.	Oc.	Re.		16	7		II. *	Sh.	Eg.		7	11		II.	Tr.	In.
	21	37		I.	Sh.	In.		17	32		II.	Tr.	Eg.		7	36		III.	Oc.	Dis.
	22	9		I.	Tr.	In.		18	12		I.	Oc.	Re.		7	59		II.	Sh.	Eg.
	23	51		I.	Sh.	Eg.	16	12	29		I.	Sh.	In.		9	12		I.	Oc.	Re.
6	0	24		I.	Tr.	Eg.		13	10		I.	Tr.	In.		9	43		II.	Tr.	Eg.
	16	14	50.6	II. *	Ec.	Dis.		14	43		I.	Sh.	Eg.		10	9		III.	Oc.	Re.
	18	56	24.1	I.	Ec.	Dis.		15	25		I.	Tr.	Eg.	27	3	20		I.	Sh.	In.
	19	49		II.	Oc.	Re.	17	8	11	6.2	II.	Ec.	Dis.		4	11		I.	Tr.	In.
	21	41		I.	Oc.	Re.		9	47	10.8	I.	Ec.	Dis.		5	35		I.	Sh.	Eg.
7	16	6		I. *	Sh.	In.		12	6		II.	Oc.	Re.		6	26		I.	Tr.	Eg.
	16	39		I.	Tr.	In.		12	42		I.	Oc.	Re.	28	0	6	9.0	II.	Ec.	Dis.
	18	20		I.	Sh.	Eg.	18	6	57		I.	Sh.	In.		0	37	42.7	I.	Ec.	Dis.
	18	54		I.	Tr.	Eg.		7	40		I.	Tr.	In.		3	42		I.	Oc.	Re.
8	6	26		III.	Sh.	In.		9	12		I.	Sh.	Eg.		4	20		II.	Oc.	Re.
	8	41		III.	Tr.	In.		9	56		I.	Tr.	Eg.		21	49		I.	Sh.	In.
	8	46		III.	Sh.	Eg.	19	0	22	12.4	III.	Ec.	Dis.		22	41		I.	Tr.	In.
	11	4		II.	Sh.	In.		2	34	10.8	III.	Ec.	Re.	29	0	4		I.	Sh.	Eg.
	11	10		III.	Tr.	Eg.		2	56		II.	Sh.	In.		0	56		I.	Tr.	Eg.
	12	13		II.	Tr.	In.		3	12		III.	Oc.	Dis.		18	25		III.	Sh.	In.
	13	24	54.0	I.	Ec.	Dis.		4	15	36.6	I.	Ec.	Dis.		18	46		II.	Sh.	In.
	13	32		II.	Sh.	Eg.		4	25		II.	Tr.	In.		19	6	8.2	I.	Ec.	Dis.
	14	44		II.	Tr.	Eg.		5	24		II.	Sh.	Eg.		20	34		II.	Tr.	In.
	16	12		I. *	Oc.	Re.		5	43		III.	Oc.	Re.		20	50		III.	Sh.	Eg.
9	10	34		I.	Sh.	In.		6	56		II.	Tr.	Eg.		21	16		II.	Sh.	Eg.
	11	9		I.	Tr.	In.		7	12		I.	Oc.	Re.		21	56		III.	Tr.	In.
	12	48		I.	Sh.	Eg.	20	1	26		I.	Sh.	In.		22	12		I.	Oc.	Re.
	13	24		I.	Tr.	Eg.		2	11		I.	Tr.	In.		23	6		II.	Tr.	Eg.
10	5	33	58.0	II.	Ec.	Dis.		3	40		I.	Sh.	Eg.	30	0	30		III.	Tr.	Eg.
	7	53	22.0	I.	Ec.	Dis.		4	26		I.	Tr.	Eg.		16	18		I. *	Sh.	In.
	9	15		II.	Oc.	Re.		21	29	5.7	II.	Ec.	Dis.		17	11		I.	Tr.	In.
	10	42		I.	Oc.	Re.		22	44	1.7	I.	Ec.	Dis.		18	32		I.	Sh.	Eg.
11	5	3		I.	Sh.	In.	21	1	31		II.	Oc.	Re.		19	26		I.	Tr.	Eg.
	5	40		I.	Tr.	In.		1	42		I.	Oc.	Re.	31	13	25	13.0	II.	Ec.	Dis.
	7	17		I.	Sh.	Eg.		19	55		I.	Sh.	In.		13	34	33.2	I.	Ec.	Dis.
	7	55		I.	Tr.	Eg.		20	41		I.	Tr.	In.		16	42		I.	Oc.	Re.
	20	23	7.3	III.	Ec.	Dis.		22	9		I.	Sh.	Eg.		17	45		II.	Oc.	Re.
	22	33	43.9	III.	Ec.	Re.														

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

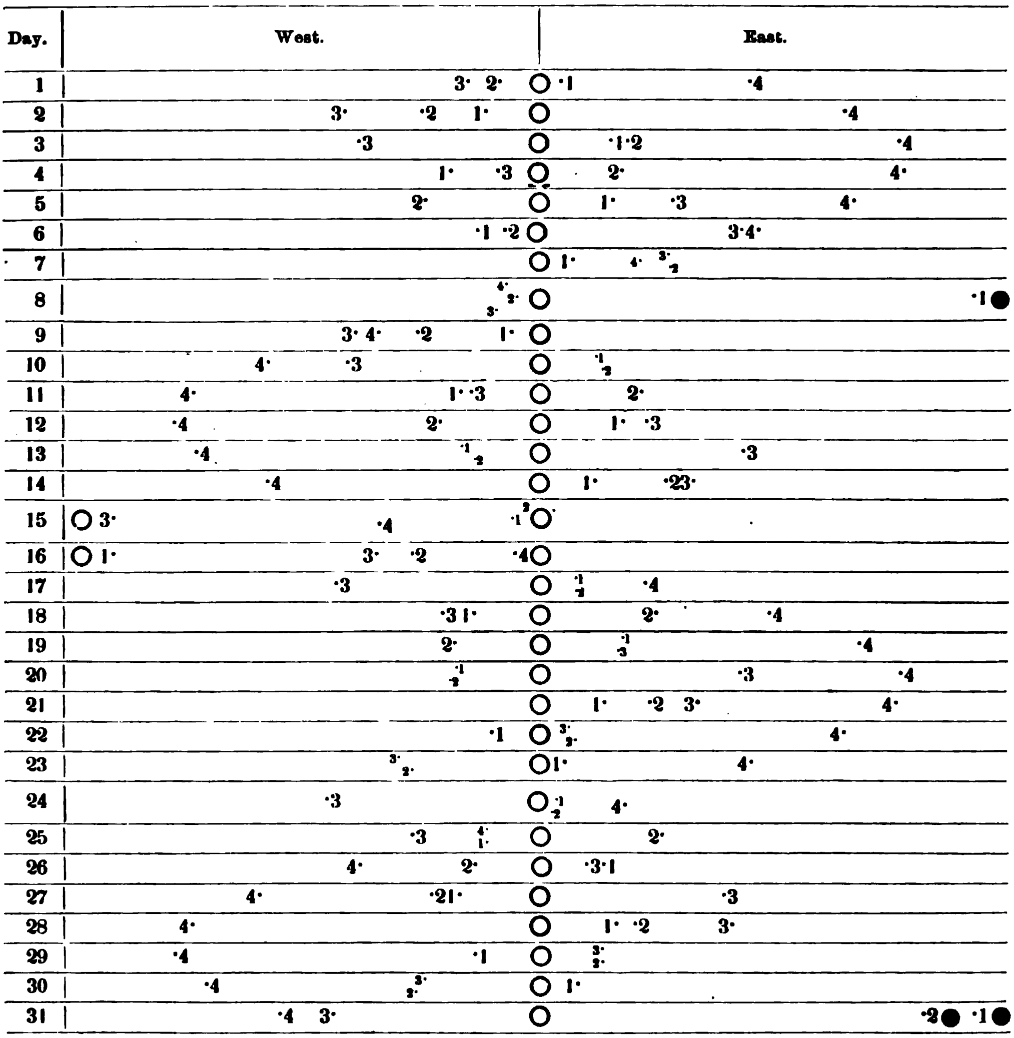
WASHINGTON MEAN TIME.

JULY.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 15ʰ for an Inverting Telescope.



Day.	West.		East.
1	3· 2·	○	·1 ·4
2	3· ·2 1·	○	·4
3	·3	○	·1·2 ·4
4	1· ·3	○	2· 4·
5	2·	○	1· ·3 4·
6	·1 ·2	○	3·4·
7		○	1· 4· 3· ·2
8	4· 3· 2·	○	·1 ●
9	3· 4· ·2 1·	○	
10	4· ·3	○	·1 ·2
11	4· 1· ·3	○	2·
12	·4 2·	○	1· ·3
13	·4 ·1 ·2	○	·3
14	·4	○	1· ·23·
15	○ 3· ·4 ·1 2	○	
16	○ 1· 3· ·2 ·4	○	
17	·3	○	·1 ·2 ·4
18	·3 1·	○	2· ·4
19	2·	○	·1 ·3 ·4
20	·1 ·2	○	·3 ·4
21		○	1· ·2 3· 4·
22	·1	○	3· 2· 4·
23	3· 2·	○	1· 4·
24	·3	○	·1 ·2 4·
25	·3 4· 1·	○	2·
26	4· 2·	○	·3·1
27	4· ·21·	○	·3
28	4·	○	1· ·2 3·
29	·4 ·1	○	3· 2·
30	·4 3· 2·	○	1·
31	·4 3·	○	·2 ● ·1 ●

WASHINGTON MEAN TIME.

AUGUST.

d	h	m	s			
1	10	46		I.	Sh.	In.
	11	41		I.	Tr.	In.
	13	1		I.	Sh.	Eg.
	13	56		I. *	Tr.	Eg.
2	8	3		II.	Sh.	In.
	8	2	56.6	I.	Ec.	Dis.
	8	19	48.4	III.	Ec.	Dis.
	9	56		II.	Tr.	In.
	10	32		II.	Sh.	Eg.
	10	34	30.0	III.	Ec.	Re.
	11	11		I.	Oc.	Re.
	11	58		III.	Oc.	Dis.
	12	28		II.	Tr.	Eg.
	14	32		III. *	Oc.	Re.
3	5	15		I.	Sh.	In.
	6	11		I.	Tr.	In.
	7	29		I.	Sh.	Eg.
	8	26		I.	Tr.	Eg.
4	2	31	19.8	I.	Ec.	Dis.
	2	33	8.6	II.	Ec.	Dis.
	5	41		I.	Oc.	Re.
	7	9		II.	Oc.	Re.
	23	43		I.	Sh.	In.
5	0	41		I.	Tr.	In.
	1	58		I.	Sh.	Eg.
	2	56		I.	Tr.	Eg.
	20	59	44.0	I.	Ec.	Dis.
	21	19		II.	Sh.	In.
	22	24		III.	Sh.	In.
	23	18		II.	Tr.	In.
	23	49		II.	Sh.	Eg.
6	0	11		I.	Oc.	Re.
	0	50		III.	Sh.	Eg.
	1	50		II.	Tr.	Eg.
	2	18		III.	Tr.	In.
	4	53		III.	Tr.	Eg.
	18	12		I.	Sh.	In.
	19	11		I.	Tr.	In.
	20	26		I.	Sh.	Eg.
	21	26		I.	Tr.	Eg.
7	15	28	8.1	I. *	Ec.	Dis.
	16	2	9.4	II. *	Ec.	Dis.
	18	41		I.	Oc.	Re.
	20	34		II.	Oc.	Re.
8	12	40		I.	Sh.	In.
	13	41		I.	Tr.	In.
	14	55		I. *	Sh.	Eg.
	15	56		I. *	Tr.	Eg.
9	9	56	30.4	I.	Ec.	Dis.
	10	36		II.	Sh.	In.
	12	18	16.2	III.	Ec.	Dis.
	12	40		II.	Tr.	In.
	13	6		II.	Sh.	Eg.
	13	10		I.	Oc.	Re.
	14	34	19.4	III. *	Ec.	Re.
	15	13		II. *	Tr.	Eg.
	16	17		III. *	Oc.	Dis.
	18	53		III.	Oc.	Re.
10	7	9		I.	Sh.	In.
	8	10		I.	Tr.	In.
	9	24		I.	Sh.	Eg.
	10	26		I.	Tr.	Eg.
11	4	24	53.0	I.	Ec.	Dis.
	5	20	2.0	II.	Ec.	Dis.
	7	40		I.	Oc.	Re.

d	h	m	s			
11	9	57		II.	Oc.	Re.
12	1	38		I.	Sh.	In.
	2	40		I.	Tr.	In.
	3	52		I.	Sh.	Eg.
	4	56		I.	Tr.	Eg.
	22	53	16.3	I.	Ec.	Dis.
	23	53		II.	Sh.	In.
13	2	2		II.	Tr.	In.
	2	9		I.	Oc.	Re.
	2	23		III.	Sh.	In.
	2	23		II.	Sh.	Eg.
	4	35		II.	Tr.	Eg.
	4	50		III.	Sh.	Eg.
	6	37		III.	Tr.	In.
	9	14		III.	Tr.	Eg.
	20	6		I.	Sh.	In.
	21	10		I.	Tr.	In.
	22	21		I.	Sh.	Eg.
	23	25		I.	Tr.	Eg.
14	17	21	39.4	I.	Ec.	Dis.
	18	39	0.4	II.	Ec.	Dis.
	20	39		I.	Oc.	Re.
	23	21		II.	Oc.	Re.
15	14	35		I. *	Sh.	In.
	15	40		I. *	Tr.	In.
	16	49		I. *	Sh.	Eg.
	17	55		I.	Tr.	Eg.
16	11	50	0.9	I.	Ec.	Dis.
	13	10		II.	Sh.	In.
	15	9		I. *	Oc.	Re.
	15	24		II. *	Tr.	In.
	15	40		II. *	Sh.	Eg.
	16	17	1.7	III. *	Ec.	Dis.
	17	57		II.	Tr.	Eg.
	18	34	26.7	III.	Ec.	Re.
	20	35		III.	Oc.	Dis.
	23	13		III.	Oc.	Re.
17	9	3		I.	Sh.	In.
	10	10		I.	Tr.	In.
	11	18		I.	Sh.	Eg.
	12	25		I.	Tr.	Eg.
18	6	18	22.4	I.	Ec.	Dis.
	7	56	50.2	II.	Ec.	Dis.
	9	38		I.	Oc.	Re.
	12	44		II.	Oc.	Re.
19	3	32		I.	Sh.	In.
	4	39		I.	Tr.	In.
	5	46		I.	Sh.	Eg.
	6	54		I.	Tr.	Eg.
20	0	46	44.5	I.	Ec.	Dis.
	2	27		II.	Sh.	In.
	4	7		I.	Oc.	Re.
	4	45		II.	Tr.	In.
	4	57		II.	Sh.	Eg.
	6	22		III.	Sh.	In.
	7	19		II.	Tr.	Eg.
	8	50		III.	Sh.	Eg.
	10	54		III.	Tr.	In.
	13	32		III.	Tr.	Eg.
	22	0		I.	Sh.	In.
	23	9		I.	Tr.	In.
21	0	15		I.	Sh.	Eg.
	1	24		I.	Tr.	Eg.
	19	15	7.5	I.	Ec.	Dis.
	21	15	44.8	II.	Ec.	Dis.

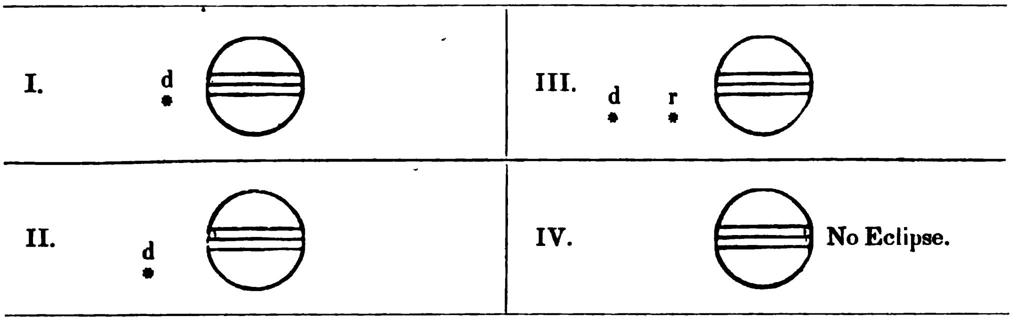
d	h	m	s			
21	22	37		I.	Oc.	Re.
22	2	7		II.	Oc.	Re.
	16	29		I. *	Sh.	In.
	17	38		I.	Tr.	In.
	18	43		I.	Sh.	Eg.
	19	53		I.	Tr.	Eg.
23	13	43	28.2	I. *	Ec.	Dis.
	15	44		II. *	Sh.	In.
	17	6		I. *	Oc.	Re.
	18	6		II.	Tr.	In.
	18	14		II.	Sh.	Eg.
	20	15	42.3	III.	Ec.	Dis.
	20	40		II.	Tr.	Eg.
	22	34	28.9	III.	Ec.	Re.
24	0	51		III.	Oc.	Dis.
	3	30		III.	Oc.	Re.
	10	57		I.	Sh.	In.
	12	8		I.	Tr.	In.
	13	12		I. *	Sh.	Eg.
	14	23		I. *	Tr.	Eg.
25	8	11	49.3	I.	Ec.	Dis.
	10	33	32.6	II.	Ec.	Dis.
	11	36		I.	Oc.	Re.
	15	29		II. *	Oc.	Re.
26	5	26		I.	Sh.	In.
	6	37		I.	Tr.	In.
	7	40		I.	Sh.	Eg.
	8	52		I.	Tr.	Eg.
27	2	40	10.4	I.	Ec.	Dis.
	5	1		II.	Sh.	In.
	6	5		I.	Oc.	Re.
	7	27		II.	Tr.	In.
	7	31		II.	Sh.	Eg.
	10	0		II.	Tr.	Eg.
	10	20		III.	Sh.	In.
	12	50		III. *	Sh.	Eg.
	15	8		III. *	Tr.	In.
	17	47		III.	Tr.	Eg.
	23	54		I.	Sh.	In.
28	1	6		I.	Tr.	In.
	2	9		I.	Sh.	Eg.
	3	22		I.	Tr.	Eg.
	21	8	32.9	I.	Ec.	Dis.
	23	52	23.0	II.	Ec.	Dis.
29	0	34		I.	Oc.	Re.
	4	52		II.	Oc.	Re.
	18	23		I.	Sh.	In.
	19	36		I.	Tr.	In.
	20	37		I.	Sh.	Eg.
	21	51		I.	Tr.	Eg.
30	15	36	52.9	I. *	Ec.	Dis.
	18	17		II.	Sh.	In.
	19	3		I.	Oc.	Re.
	20	47		II.	Tr.	In.
	20	48		II.	Sh.	Eg.
	23	21		II.	Tr.	Eg.
31	0	14	56.5	III.	Ec.	Dis.
	2	35	4.5	III.	Ec.	Re.
	5	4		III.	Oc.	Dis.
	7	45		III.	Oc.	Re.
	12	51		I. *	Sh.	In.
	14	5		I. *	Tr.	In.
	15	6		I. *	Sh.	Eg.
	16	21		I. *	Tr.	Eg.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

AUGUST.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 15ʰ for an Inverting Telescope.

Day.	West.		East.
1	$^{3}_{4}$ 1·	○	2·
2	2·	.○	$^{3}_{4}$ ·1
3	·2 1·	○	·4 ·3
4		○	$^{·1}_{·2}$ 3· ·4
5	·1	○	$^{3·}_{2·}$ ·4
6	2· 3·	○	1· ·4
7	3· $^{·1}_{·2}$	○	4·
8	○1· ·3	○	·2 4· ·
9	○2· ·3	○	·1 4·
10	·2 1·	○	4· ·3
11	4·	○	·2·1 3·
12	4· ·1	○	2·3·
13	4· 2· 3·	○	1·
14	4· 3· ·2·1	○	
15	·4 ·3	○	1· ·2
16	·4 ·3 $_{2}$	○.	·1 ●
17	·4 ·2 1·	○	·3
18	·4	○	·2 ·1 ·3
19	1·	○	·4 2· 3·
20	2· 3·	○	1· ·4
21	3· ·2 ·1	○	·4
22	·3	○	1· ·2 ·4
23	·3	○	2· ·4 ·1 ●
24	2· 1·	○	·3 4·
25		○	·1 ·3 4· ·2 ●
26	1·	○	2· 3·4·
27	2·	^{3}○·	4· ·1
28	3· $^{4·}_{·2}$ ·1	○	
29	$^{4·}_{·3}$	○	1· ·2
30	4· ·3 ·1	○	2·
31	○1· 4· 2·	○	·3

WASHINGTON MEAN TIME.

SEPTEMBER.

d	h	m	s			
1	10	5	13.4	I.	Ec.	Dis.
	13	10	8.5	II.*	Ec.	Dis.
	13	32		I.*	Oc.	Re.
	15	36	33.9	II.*	Ec.	Re.
	15	39		II.*	Oc.	Dis.
	18	13		II.	Oc.	Re.
2	7	20		I.	Sh.	In.
	8	34		I.	Tr.	In.
	9	34		I.	Sh.	Eg.
	10	50		I.	Tr.	Eg.
3	4	33	33.0	I.	Ec.	Dis.
	7	34		II.	Sh.	In.
	8	2		I.	Oc.	Re.
	10	5		II.	Sh.	Eg.
	10	6		II.	Tr.	In.
	12	41		II.*	Tr.	Eg.
	14	20		III.*	Sh.	In.
	16	51		III.*	Sh.	Eg.
	19	20		III.	Tr.	In.
	22	1		III.	Tr.	Eg.
4	1	48		I.	Sh.	In.
	3	4		I.	Tr.	In.
	4	3		I.	Sh.	Eg.
	5	19		I.	Tr.	Eg.
	23	1	56.6	I.	Ec.	Dis.
5	2	28	54.0	II.	Ec.	Dis.
	2	31		I.	Oc.	Re.
	4	55	31.1	II.	Ec.	Re.
	5	1		II.	Oc.	Dis.
	7	34		II.	Oc.	Re.
	20	17		I.	Sh.	In.
	21	33		I.	Tr.	In.
	22	32		I.	Sh.	Eg.
	23	48		I.	Tr.	Eg.
6	17	30	15.9	I.	Ec.	Dis.
	20	51		II.	Sh.	In.
	21	0		I.	Oc.	Re.
	23	22		II.	Sh.	Eg.
	23	26		II.	Tr.	In.
7	2	0		II.	Tr.	Eg.
	4	13	31.7	III.	Ec.	Dis.
	6	35	1.5	III.	Ec.	Re.
	9	14		III.	Oc.	Dis.
	11	56		III.*	Oc.	Re.
	14	45		I.*	Sh.	In.
	16	2		I.*	Tr.	In.
	17	0		I.*	Sh.	Eg.
	18	18		I.	Tr.	Eg.
8	11	58	36.2	I.*	Ec.	Dis.
	15	29		I.*	Oc.	Re.
	15	46	36.8	II.*	Ec.	Dis.
	18	13	24.8	II.	Ec.	Re.
	18	21		II.	Oc.	Dis.
	20	55		II.	Oc.	Re.
9	9	14		I.	Sh.	In.
	10	31		I.	Tr.	In.
	11	29		I.	Sh.	Eg.
	12	47		I.*	Tr.	Eg.
10	6	26	56.2	I.	Ec.	Dis.
	9	57		I.	Oc.	Re.
	10	8		II.	Sh.	In.
	12	39		II.*	Sh.	Eg.
	12	45		II.*	Tr.	In.
	15	19		II.*	Tr.	Eg.
	18	19		III.	Sh.	In.
	20	51		III.	Sh.	Eg.
	23	29		III.	Tr.	In.
11	2	11		III.	Tr.	Eg.
11	3	43		I.	Sh.	In.
	5	0		I.	Tr.	In.
	5	57		I.	Sh.	Eg.
	7	15		I.	Tr.	Eg.
12	0	55	18.6	I.	Ec.	Dis.
	4	26		I.	Oc.	Re.
	5	5	17.8	II.	Ec.	Dis.
	7	32	17.0	II.	Ec.	Re.
	7	41		II.	Oc.	Dis.
	10	16		II.	Oc.	Re.
	22	11		I.	Sh.	In.
	23	29		I.	Tr.	In.
13	0	26		I.	Sh.	Eg.
	1	44		I.	Tr.	Eg.
	19	23	37.4	I.	Ec.	Dis.
	22	55		I.	Oc.	Re.
	23	25		II.	Sh.	In.
14	1	56		II.	Sh.	Eg.
	2	3		II.	Tr.	In.
	4	38		II.	Tr.	Eg.
	8	12	6.9	III.	Ec.	Dis.
	10	34	58.7	III.	Ec.	Re.
	13	21		III.*	Oc.	Dis.
	16	4		III.*	Oc.	Re.
	16	39		I.*	Sh.	In.
	17	58		I.	Tr.	In.
	18	54		I.	Sh.	Eg.
	20	14		I.	Tr.	Eg.
15	13	51	58.0	I.*	Ec.	Dis.
	17	24		I.	Oc.	Re.
	18	22	57.6	II.	Ec.	Dis.
	20	50	7.8	II.	Ec.	Re.
	21	0		II.	Oc.	Dis.
	23	35		II.	Oc.	Re.
16	11	8		I.	Sh.	In.
	12	26		I.*	Tr.	In.
	13	23		I.*	Sh.	Eg.
	14	42		I.*	Tr.	Eg.
17	8	20	17.5	I.	Ec.	Dis.
	11	53		I.*	Oc.	Re.
	12	42		II.*	Sh.	In.
	15	13		II.*	Sh.	Eg.
	15	22		II.*	Tr.	In.
	17	57		II.	Tr.	Eg.
	22	18		III.	Sh.	In.
18	0	52		III.	Sh.	Eg.
	3	34		III.	Tr.	In.
	5	36		I.	Sh.	In.
	6	18		III.	Tr.	Eg.
	6	55		I.	Tr.	In.
	7	51		I.	Sh.	Eg.
	9	11		I.	Tr.	Eg.
19	2	48	40.1	I.	Ec.	Dis.
	6	21		I.	Oc.	Re.
	7	41	33.4	II.	Ec.	Dis.
	10	8	54.6	II.	Ec.	Re.
	10	20		II.	Oc.	Dis.
	12	55		II.*	Oc.	Re.
20	0	5		I.	Sh.	In.
	1	24		I.	Tr.	In.
	2	20		I.	Sh.	Eg.
	3	40		I.	Tr.	Eg.
	21	16	58.9	I.	Ec.	Dis.
21	0	50		I.	Oc.	Re.
	1	59		II.	Sh.	In.
	4	31		II.	Sh.	Eg.
	4	39		II.	Tr.	In.
21	7	15		II.	Tr.	Eg.
	12	10	18.5	III.*	Ec.	Dis.
	14	34	30.3	III.*	Ec.	Re.
	17	23		III.	Oc.	Dis.
	18	33		I.	Sh.	In.
	19	53		I.	Tr.	In.
	20	8		III.	Oc.	Re.
	20	48		I.	Sh.	Eg.
	22	8		I.	Tr.	Eg.
22	15	45	19.7	I.*	Ec.	Dis.
	19	18		I.	Oc.	Re.
	20	59	10.9	II.	Ec.	Dis.
	23	26	42.9	II.	Ec.	Re.
	23	38		II.	Oc.	Dis.
23	2	14		II.	Oc.	Re.
	13	2		I.*	Sh.	In.
	14	21		I.*	Tr.	In.
	15	17		I.*	Sh.	Eg.
	16	37		I.*	Tr.	Eg.
24	10	13	39.1	I.	Ec.	Dis.
	13	47		I.*	Oc.	Re.
	15	15		II.*	Sh.	In.
	17	48		II.	Sh.	Eg.
	17	56		II.	Tr.	In.
	20	32		II.	Tr.	Eg.
25	2	17		III.	Sh.	In.
	4	52		III.	Sh.	Eg.
	7	30		I.	Sh.	In.
	7	35		III.	Tr.	In.
	8	50		I.	Tr.	In.
	9	45		I.	Sh.	Eg.
	10	20		III.	Tr.	Eg.
	11	6		I.*	Tr.	Eg.
26	4	42	2.0	I.	Ec.	Dis.
	8	15		I.	Oc.	Re.
	10	17	41.1	II.	Ec.	Dis.
	12	45	23.7	II.*	Ec.	Re.
	12	57		II.*	Oc.	Dis.
	15	32		II.*	Oc.	Re.
27	1	58		I.	Sh.	In.
	3	18		I.	Tr.	In.
	4	14		I.	Sh.	Eg.
	5	34		I.	Tr.	Eg.
	23	10	21.1	I.	Ec.	Dis.
28	2	43		I.	Oc.	Re.
	4	32		II.	Sh.	In.
	7	5		II.	Sh.	Eg.
	7	13		II.	Tr.	In.
	9	49		II.	Tr.	Eg.
	16	8	29.7	III.*	Ec.	Dis.
	18	34	1.7	III.	Ec.	Re.
	20	27		I.	Sh.	In.
	21	23		III.	Oc.	Dis.
	21	47		I.	Tr.	In.
	22	42		I.	Sh.	Eg.
29	0	2		I.	Tr.	Eg.
	0	6		III.	Oc.	Re.
	17	38	42.1	I.	Ec.	Dis.
	21	12		I.	Oc.	Re.
	23	35	15.8	II.	Ec.	Dis.
30	2	3	9.0	II.	Ec.	Re.
	2	14		II.	Oc.	Dis.
	4	50		II.	Oc.	Re.
	14	55		I.*	Sh.	In.
	16	15		I.*	Tr.	In.
	17	11		I.*	Sh.	Eg.
	18	31		I.	Tr.	Eg.

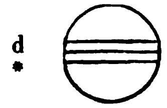
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

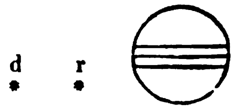
SEPTEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

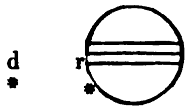
I.



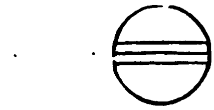
III.



II.



IV.



No Eclipse.

Configurations at 14ʰ for an Inverting Telescope.

Day.	West.		East.
1	·4	○	·1 ·3 ·2●
2	·4 1·	○	·2 3·
3	·4 2·	○	3· ·1
4	3··2·41·	○	
5	3·	○	·4 1· ·2
6	·3 ·1	○	2· ·4
7	2·	○	1· ·3 ·4
8	·2	○	·3 ·4 ·1●
9	1·	○	·2 3· 4·
10	○ 2·	○	·13· 4·
11	·23· 1·	○	4·
12	3·	○	·2 1· 4·
13	·3 ·1	○	4· 2·
14	4· 2·	○	1· ·3●
15	4· ·2	○	·3 ·1●
16	○ 1· 4·	○	·2 3·
17	4·	○	2· ·1 3·
18	·4 2· 1· 3·	○	
19	·4 3·	○	·2 ·1
20	·4 ·3 ·1	○	2·
21	2· ·4	○	1· ·3●
22	·2 ·1	○	·4 ·3
23		○	1· ·2 3· ·4
24		○	·1 2· 3· ·4
25	2· 3· 1·	○	·4
26	3·	○	·1 4· ·2●
27	·3 1·	○	2· 4·
28	2· ·3	○	1· 4·
29	·2 ·1	○	4· ·3
30	4·	○	1· ·2 ·3

WASHINGTON MEAN TIME.

OCTOBER.

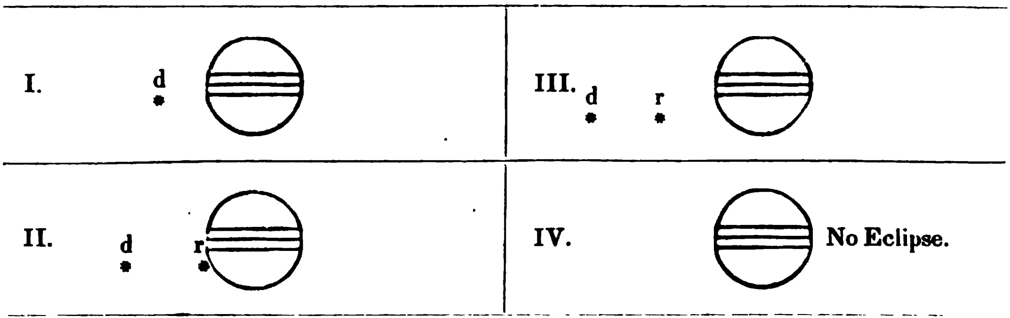
d	h	m	s			
1	12	7	1.6	I. *	Ec.	Dis.
	15	40		I. *	Oc.	Re.
	17	50		II.	Sh.	In.
	20	22		II.	Sh.	Eg.
	20	30		II.	Tr.	In.
	23	6		II.	Tr.	Eg.
2	6	16		III.	Sh.	In.
	8	52		III.	Sh.	Eg.
	9	24		I.	Sh.	In.
	10	43		I. *	Tr.	In.
	11	33		III. *	Tr.	In.
	11	39		I. *	Sh.	Eg.
	12	59		I. *	Tr.	Eg.
	14	19		III. *	Tr.	Eg.
3	6	35	24.8	I.	Ec.	Dis.
	10	8		I.	Oc.	Re.
	12	53	41.5	II. *	Ec.	Dis.
	15	21	45.1	II. *	Ec.	Re.
	15	31		II. *	Oc.	Dis.
	18	7		II.	Oc.	Re.
4	3	52		I.	Sh.	In.
	5	11		I.	Tr.	In.
	6	8		I.	Sh.	Eg.
	7	27		I.	Tr.	Eg.
5	1	3	44.2	I.	Ec.	Dis.
	4	36		I.	Oc.	Re.
	7	7		II.	Sh.	In.
	9	39		II.	Sh.	Eg.
	9	46		II.	Tr.	In.
	12	22		II. *	Tr.	Eg.
	20	7	3.8	III.	Ec.	Dis.
	22	21		I.	Sh.	In.
	22	33	56.8	III.	Ec.	Re.
	23	40		I.	Tr.	In.
6	0	36		I.	Sh.	Eg.
	1	18		III.	Oc.	Dis.
	1	56		I.	Tr.	Eg.
	4	3		III.	Oc.	Re.
	19	32	5.6	I.	Ec.	Dis.
	23	4		I.	Oc.	Re.
7	2	11	13.2	II.	Ec.	Dis.
	4	39	27.0	II.	Ec.	Re.
	4	47		II.	Oc.	Dis.
	7	24		II.	Oc.	Re.
	16	49		I. *	Sh.	In.
	18	8		I.	Tr.	In.
	19	5		I.	Sh.	Eg.
	20	24		I.	Tr.	Eg.
8	14	0	25.4	I. *	Ec.	Dis.
	17	32		I. *	Oc.	Re.
	20	24		II.	Sh.	In.
	22	56		II.	Sh.	Eg.
	23	1		II.	Tr.	In.
9	1	37		II.	Tr.	Eg.
	10	14		III.	Sh.	In.
	11	18		I. *	Sh.	In.
	12	36		I. *	Tr.	In.
	12	51		III. *	Sh.	Eg.
	13	33		I. *	Sh.	Eg.
	14	52		I. *	Tr.	Eg.
	15	25		III. *	Tr.	In.
	18	12		III.	Tr.	Eg.
10	8	28	49.3	I.	Ec.	Dis.
	12	0		I. *	Oc.	Re.
	15	29	32.1	II. *	Ec.	Dis.
	17	57	56.1	II. *	Ec.	Re.
	18	4		II.	Oc.	Dis.
10	20	40		II.	Oc.	Re.
11	5	46		I.	Sh.	In.
	7	3		I.	Tr.	In.
	8	2		I.	Sh.	Eg.
	9	20		I.	Tr.	Eg.
12	2	57	9.2	I.	Ec.	Dis.
	6	28		I.	Oc.	Re.
	9	41		II. *	Sh.	In.
	12	14		II. *	Sh.	Eg.
	12	16		II. *	Tr.	In.
	14	52		II. *	Tr.	Eg.
13	0	5	37.0	III.	Ec.	Dis.
	0	15		I.	Sh.	In.
	1	31		I.	Tr.	In.
	2	31		I.	Sh.	Eg.
	2	33	51.0	III.	Ec.	Re.
	3	47		I.	Tr.	Eg.
	5	8		III.	Oc.	Dis.
	7	55		III.	Oc.	Re.
	21	25	31.4	I.	Ec.	Dis.
14	0	56		I.	Oc.	Re.
	4	47	3.0	II.	Ec.	Dis.
	7	15	37.1	II.	Ec.	Re.
	7	19		II.	Oc.	Dis.
	9	55		II. *	Oc.	Re.
	18	43		I.	Sh.	In.
	19	59		I.	Tr.	In.
	20	58		I.	Sh.	Eg.
	22	15		I.	Tr.	Eg.
15	15	53	51.8	I. *	Ec.	Dis.
	19	23		I.	Oc.	Re.
	22	58		II.	Sh.	In.
16	1	30		II.	Tr.	In.
	1	31		II.	Sh.	Eg.
	4	6		II.	Tr.	Eg.
	13	11		I. *	Sh.	In.
	14	12		III. *	Sh.	In.
	14	27		I. *	Tr.	In.
	15	27		I. *	Sh.	Eg.
	16	43		I. *	Tr.	Eg.
	16	51		III.	Sh.	Eg.
	19	13		III.	Tr.	In.
	22	1		III.	Tr.	Eg.
17	10	22	17.7	I. *	Ec.	Dis.
	13	51		I. *	Oc.	Re.
	18	5	17.8	II.	Ec.	Dis.
	23	10		II.	Oc.	Re.
18	7	40		I.	Sh.	In.
	8	54		I.	Tr.	In.
	9	55		I. *	Sh.	Eg.
	11	10		I. *	Tr.	Eg.
19	4	50	37.3	I.	Ec.	Dis
	8	18		I.	Oc.	Re.
	12	15		II. *	Sh.	In.
	14	44		II. *	Tr.	In.
	14	49		II. *	Sh.	Eg.
	17	20		II. *	Tr.	Eg.
20	2	8		I.	Sh.	In.
	3	22		I.	Tr.	In.
	4	4	47.8	III.	Ec.	Dis.
	4	24		I.	Sh.	Eg.
	5	38		I.	Tr.	Eg.
	6	34	21.8	III.	Ec.	Re.
	8	55		III.	Oc.	Dis.
	11	42		III. *	Oc.	Re.
	23	19	0.6	I.	Ec.	Dis.
21	2	46		I.	Oc.	Re.
21	7	22	44.6	II.	Ec.	Dis.
	12	24		II. *	Oc.	Re.
	20	37		I.	Sh.	In.
	21	49		I.	Tr.	In.
	22	52		I.	Sh.	Eg.
22	0	5		I.	Tr.	Eg.
	17	47	21.5	I. *	Ec.	Dis.
	21	13		I.	Oc.	Re.
23	1	32		II.	Sh.	In.
	3	57		II.	Tr.	In.
	4	6		II.	Sh.	Eg.
	6	33		II.	Tr.	Eg.
	15	5		I. *	Sh.	In.
	16	17		I. *	Tr.	In.
	17	21		I. *	Sh.	Eg.
	18	11		III.	Sh.	In.
	18	33		I.	Tr.	Eg.
	20	51		III.	Sh.	Eg.
	22	58		III.	Tr.	In.
24	1	45		III.	Tr.	Eg.
	12	15	47.5	I. *	Ec.	Dis.
	15	41		I. *	Oc.	Re.
	20	40	51.7	II.	Ec.	Dis.
25	1	38		II.	Oc.	Re.
	9	34		I. *	Sh.	In.
	10	44		I. *	Tr.	In.
	11	49		I. *	Sh.	Eg.
	13	0		I. *	Tr.	Eg.
26	6	44	9.1	I.	Ec.	Dis.
	10	8		I. *	Oc.	Re.
	14	50		II. *	Sh.	In.
	17	10		II. *	Tr.	In.
	17	24		II. *	Sh.	Eg.
	19	46		II.	Tr.	Eg.
27	4	2		I.	Sh.	In.
	5	12		I.	Tr.	In.
	6	18		I.	Sh.	Eg.
	7	28		I.	Tr.	Eg.
	8	3	25.3	III.	Ec.	Dis.
	10	34	18.7	III. *	Ec.	Re.
	12	36		III. *	Oc.	Dis.
	15	24		III. *	Oc.	Re.
28	1	12	33.6	I.	Ec.	Dis.
	4	35		I.	Oc.	Re.
	9	58	19.0	II.	Ec.	Dis.
	14	50		II. *	Oc.	Re.
	22	30		I.	Sh.	In.
	23	39		I.	Tr.	In.
29	0	46		I.	Sh.	Eg.
	1	55		I.	Tr.	Eg.
	19	40	55.6	I.	Ec.	Dis.
	23	2		I.	Oc.	Re.
30	4	7		II.	Sh.	In.
	6	22		II.	Tr.	In.
	6	41		II.	Sh.	Eg.
	8	59		II.	Tr.	Eg.
	16	59		I. *	Sh.	In.
	18	6		I.	Tr.	In.
	19	15		I.	Sh.	Eg.
	20	22		I.	Tr.	Eg.
	22	10		III.	Sh.	In.
31	0	51		III.	Sh.	Eg.
	2	37		III.	Tr.	In.
	5	24		III.	Tr.	Eg.
	14	9	23.0	I. *	Ec.	Dis.
	17	29		I. *	Oc.	Re.
	23	16	20.8	II.	Ec.	Dis.

NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

OCTOBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.



Configurations at 14ʰ for an Inverting Telescope.

Day.	West.		East.
1	4·	○	2· 3· ·1 ●
2	○ 3· 4· 2· 1·	○	
3	4· 3·	○	·1 ·2 ●
4	4· ·3 1·	○	·2
5	·4 ·3 2·	○	·1
6	·4 ·2 ·1	○	·3
7	·4	○	1· ·2 ·3
8	·1 ·4	○	2· 3·
9	○ 1· 2·	○	3· ·4
10	3· ·2	○	·1 ·4
11	·3 1·	○	·2 ·4
12	○ 2· ·3	○	·1 ·4
13	·2 ·1	○	·3 4·
14		○	1· ·2 ·3 4·
15	·1	○	2· 3· 4·
16	2·	○	1· 3· 4·
17	3· 4· ·2	○	·1
18	3· 4· 1·	○	·2
19	4· ·3	○	2· ·1
20	4· ·2 1·	○	·3
21	·4	○	·2 1· ·3
22	·4 ·1	○	2· 3·
23	·4 2·	○	1· 3·
24	·43· ·2	○	·1 ●
25	3· 1·	○ ·4	·2
26	·3	○	2··1 ·4
27	2· 1·	○	·4 ·3 ●
28		○	·1 ·3 ·4 ·2 ●
29	·1	○	2· 3· ·4
30	2·	○	1· 3· 4·
31	·23· ·1	⊙	4·

WASHINGTON MEAN TIME.

NOVEMBER.

d	h	m	s			
1	4	3		II.	Oc.	Re.
	11	27		I. *	Sh.	In.
	12	33		I. *	Tr.	In.
	13	43		I. *	Sh.	Eg.
	14	49		I. *	Tr.	Eg.
2	8	37	45.9	I. *	Ec.	Dis.
	11	56		I. *	Oc.	Re.
	17	24		II. *	Sh.	In.
	19	34		II.	Tr.	In.
	19	59		II.	Sh.	Eg.
	22	10		II.	Tr.	Eg.
3	5	56		I.	Sh.	In.
	7	0		I.	Tr.	In.
	8	12		I.	Sh.	Eg.
	9	16		I. *	Tr.	Eg.
	12	2	6.6	III. *	Ec.	Dis.
	14	34	18.6	III. *	Ec.	Re.
	16	13		III. *	Oc.	Dis.
	19	0		III.	Oc.	Re.
4	3	6	12.1	I.	Ec.	Dis.
	6	23		I.	Oc.	Re.
	12	33	47.3	II. *	Ec.	Dis.
	17	14		II. *	Oc.	Re.
5	0	24		I.	Sh.	In.
	1	27		I.	Tr.	In.
	2	40		I.	Sh.	Eg.
	3	43		I.	Tr.	Eg.
	21	34	34.9	I.	Ec.	Dis.
6	0	50		I.	Oc.	Re.
	6	42		II.	Sh.	In.
	8	45		II. *	Tr.	In.
	9	16		II. *	Sh.	Eg.
	11	21		II. *	Tr.	Eg.
	18	53		I.	Sh.	In.
	19	54		I.	Tr.	In.
	21	8		I.	Sh.	Eg.
	22	10		I.	Tr.	Eg.
7	2	10		III.	Sh.	In.
	4	52		III.	Sh.	Eg.
	6	12		III.	Tr.	In.
	8	59		III. *	Tr.	Eg.
	16	3	4.0	I. *	Ec.	Dis.
	19	17		I.	Oc.	Re.
8	1	51	43.8	II.	Ec.	Dis.
	6	25		II.	Oc.	Re.
	13	21		I. *	Sh.	In.
	14	20		I. *	Tr.	In.
	15	37		I. *	Sh.	Eg.
	16	36		I. *	Tr.	Eg.
9	10	31	27.2	I. *	Ec.	Dis.
	13	44		I. *	Oc.	Re.
	19	59		II.	Sh.	In.
	21	55		II.	Tr.	In.
	22	34		II.	Sh.	Eg.
10	0	32		II.	Tr.	Eg.
	7	50		I.	Sh.	In.
	8	47		I. *	Tr.	In.
	10	6		I. *	Sh.	Eg.
	11	3		I. *	Tr.	Eg.
	16	0	31.7	III. *	Ec.	Dis.
	18	34	2.3	III.	Ec.	Re.
10	19	44		III.	Oc.	Dis.
	22	32		III.	Oc.	Re.
11	4	39	56.0	I.	Ec.	Dis.
	8	10		I. *	Oc.	Re.
	15	9	9.7	II. *	Ec.	Dis.
	19	36		II.	Oc.	Re.
12	2	18		I.	Sh.	In.
	3	14		I.	Tr.	In.
	4	34		I.	Sh.	Eg.
	5	30		I.	Tr.	Eg.
	23	28	20.5	I.	Ec.	Dis.
13	2	37		I.	Oc.	Re.
	9	17		II. *	Sh.	In.
	11	5		II. *	Tr.	In.
	11	51		II. *	Sh.	Eg.
	13	42		II. *	Tr.	Eg.
	20	47		I.	Sh.	In.
	21	40		I.	Tr.	In.
	23	3		I.	Sh.	Eg.
	23	56		I.	Tr.	Eg.
14	6	8		III.	Sh.	In.
	8	52		III. *	Sh.	Eg.
	9	41		III. *	Tr.	In.
	12	29		III. *	Tr.	Eg.
	17	56	51.2	I. *	Ec.	Dis.
	21	4		I.	Oc.	Re.
15	4	27	1.5	II.	Ec.	Dis.
	8	46		II. *	Oc.	Re.
	15	15		I. *	Sh.	In.
	16	7		I. *	Tr.	In.
	17	31		I. *	Sh.	Eg.
	18	23		I. *	Tr.	Eg.
16	12	25	17.1	I. *	Ec.	Dis.
	15	30		I. *	Oc.	Re.
	22	34		II.	Sh.	In.
17	0	15		II.	Tr.	In.
	1	9		II.	Sh.	Eg.
	2	51		II.	Tr.	Eg.
	9	44		I. *	Sh.	In.
	10	33		I. *	Tr.	In.
	12	0		I. *	Sh.	Eg.
	12	50		I. *	Tr.	Eg.
	19	59	2.9	III.	Ec.	Dis.
	22	33	52.9	III.	Ec.	Re.
	23	11		III.	Oc.	Dis.
18	1	59		III.	Oc.	Re.
	6	53	46.7	I.	Ec.	Dis.
	9	56		I. *	Oc.	Re.
	17	44	27.2	II. *	Ec.	Dis.
	21	55		II.	Oc.	Re.
19	4	12		I.	Sh.	In.
	5	0		I.	Tr.	In.
	6	28		I.	Sh.	Eg.
	7	16		I. *	Tr.	Eg.
20	1	22	12.8	I.	Ec.	Dis.
	4	23		I.	Oc.	Re.
	11	52		II. *	Sh.	In.
	13	24		II. *	Tr.	In.
	14	27		II. *	Sh.	Eg.
	16	0		II. *	Tr.	Eg.
	22	41		I.	Sh.	In.
20	23	26		I.	Tr.	In.
21	0	56		I.	Sh.	Eg.
	1	42		I.	Tr.	Eg.
	10	7		III. *	Sh.	In.
	12	52		III. *	Sh.	Eg.
	13	6		III. *	Tr.	In.
	15	54		III. *	Tr.	Eg.
	19	50	45.6	I.	Ec.	Dis.
	22	49		I.	Oc.	Re.
22	7	2	14.4	II. *	Ec.	Dis.
	11	4		II. *	Oc.	Re.
	17	9		I. *	Sh.	In.
	17	52		I. *	Tr.	In.
	19	25		I.	Sh.	Eg.
	20	8		I.	Tr.	Eg.
23	14	19	13.3	I. *	Ec.	Dis.
	17	15		I. *	Oc.	Re.
24	1	10		II.	Sh.	In.
	2	32		II.	Tr.	In.
	3	45		II.	Sh.	Eg.
	5	9		II.	Tr.	Eg.
	11	38		I. *	Sh.	In.
	12	18		I. *	Tr.	In.
	13	53		I. *	Sh.	Eg.
	14	35		I. *	Tr.	Eg.
	23	58	5.3	III.	Ec.	Dis.
25	2	34	14.1	III.	Ec.	Re.
	2	35		III.	Oc.	Dis.
	5	23		III.	Oc.	Re.
	8	47	45.0	I. *	Ec.	Dis.
	11	42		I. *	Oc.	Re.
	20	19	49.8	II.	Ec.	Dis.
26	0	12		II.	Oc.	Re.
	6	6		I.	Sh.	In.
	6	44		I. *	Tr.	In.
	8	22		I. *	Sh.	Eg.
	9	1		I. *	Tr.	Eg.
27	3	16	13.0	I.	Ec.	Dis.
	6	8		I.	Oc.	Re.
	14	27		II. *	Sh.	In.
	15	41		II. *	Tr.	In.
	17	3		II. *	Sh.	Eg.
	18	17		II. *	Tr.	Eg.
28	0	34		I.	Sh.	In.
	1	11		I.	Tr.	In.
	2	50		I.	Sh.	Eg.
	3	27		I.	Tr.	Eg.
	14	5		III. *	Sh.	In.
	16	27		III. *	Tr.	In.
	16	52		III. *	Sh.	Eg.
	19	15		III.	Tr.	Eg.
	21	44	47.9	I.	Ec.	Dis.
29	0	34		I.	Oc.	Re.
	9	37	23.4	II. *	Ec.	Dis.
	13	20		II. *	Oc.	Re.
	19	3		I.	Sh.	In.
	19	37		I.	Tr.	In.
	21	19		I.	Sh.	Eg.
	21	53		I.	Tr.	Eg.
30	16	13	17.7	I. *	Ec.	Dis.
	19	0		I.	Oc.	Re.

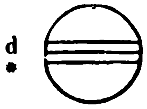
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

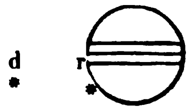
NOVEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

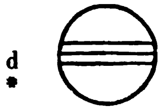
I.



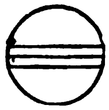
III.



II.



IV.



No Eclipse.

Configurations at 13h for an Inverting Telescope.

Day.	West.		East.
1	○ 1· 3·	○	·2 4·
2	·3	○	·14· 2·
3	2· 4· 1·	○	·3 ●
4	4·	○	·1 ·3 ·2 ●
5	4· 1·	○	·2 3·
6	4· 2·	○	1· 3·
7	·4 ·2 ·1 3·	○	
8	·4 3·	○	1· ·2
9	·4 ·3	○	2· ·1 ●
10	2· ·4 ·31·	○	
11	·2	○	·4·1 ·3
12	1·	○	·2 ·4 ·3
13	○ 2·	○	1· 3· ·4
14	·2 ·1 3·	○	·4
15	3·	○	1· ·2 4·
16	·3	○	2· 4· ·1 ●
17	2· ·3 1·	○	4·
18	·2	○	·1 ·3 4·
19	1·	4· ○	·2 ·3
20	4·	○	2· ·1 3·
21	4· ·2 ·1	3 ○ ·	
22	4· 3·	○	·21·
23	4· ·3 ·1	○	2·
24	○ 1· ·4 ·32·	○	
25	·4 ·2	○	·1 ·3
26	·4 1·	○	·2 ·3
27	·4	○	2· ·1 3·
28	2· ·1	○	3· ·4
29	3·	○	1· ·4 ·2 ●
30	·3 ·1	○	2· ·4

WASHINGTON MEAN TIME.

DECEMBER.

d	h	m	s			
1	3	45		II.	Sh.	In.
	4	49		II.	Tr.	In.
	6	21		II.	Sh.	Eg.
	7	25		II.*	Tr.	Eg.
	13	31		I.*	Sh.	In.
	14	3		I.*	Tr.	In.
	15	48		I.*	Sh.	Eg.
	16	19		I.*	Tr.	Eg.
2	3	57	11.8	III.	Ec.	Dis.
	8	43		III.*	Oc.	Re.
	10	41	51.9	I.*	Ec.	Dis.
	13	26		I.*	Oc.	Re.
	22	54	48.8	II.	Ec.	Dis.
3	2	28		II.	Oc.	Re.
	8	0		I.*	Sh.	In.
	8	29		I.*	Tr.	In.
	10	16		I.*	Sh.	Eg.
	10	45		I.*	Tr.	Eg.
4	5	10	21.8	I.	Ec.	Dis.
	7	52		I.*	Oc.	Re.
	17	3		II.*	Sh.	In.
	17	56		II.*	Tr.	In.
	19	39		II.	Sh.	Eg.
	20	33		II.	Tr.	Eg.
5	2	28		I.	Sh.	In.
	2	55		I.	Tr.	In.
	4	45		I.	Sh.	Eg.
	5	11		I.	Tr.	Eg.
	18	4		III.*	Sh.	In.
	19	46		III.	Tr.	In.
	20	51		III.	Sh.	Eg.
	22	34		III.	Tr.	Eg.
	23	38	58.9	I.	Ec.	Dis.
6	2	18		I.	Oc.	Re.
	12	12	28.8	II.*	Ec.	Dis.
	15	35		II.*	Oc.	Re.
	20	57		I.	Sh.	In.
	21	21		I.	Tr.	In.
	23	13		I.	Sh.	Eg.
	23	37		I.	Tr.	Eg.
7	18	7	31.0	I.*	Ec.	Dis.
	20	44		I.	Oc.	Re.
8	6	21		II.*	Sh.	In.
	7	4		II.*	Tr.	In.
	8	57		II.*	Sh.	Eg.
	9	40		II.*	Tr.	Eg.
	15	26		I.*	Sh.	In.
	15	47		I.*	Tr.	In.
	17	42		I.*	Sh.	Eg.
	18	3		I.*	Tr.	Eg.
9	7	57	1.0	III.*	Ec.	Dis.
	12	1		III.*	Oc.	Re.
	12	36	7.6	I.*	Ec.	Dis.
	15	10		I.*	Oc.	Re.
10	1	29	55.3	II.	Ec.	Dis.
	4	42		II.	Oc.	Re.
	9	54		I.*	Sh.	In.
	10	13		I.*	Tr.	In.
	12	11		I.*	Sh.	Eg.
	12	29		I.*	Tr.	Eg.
11	7	4	39.6	I.*	Ec.	Dis.
	9	36		I.*	Oc.	Re.
	19	39		II.	Sh.	In.
11	20	11		II.	Tr.	In.
	22	16		II.	Sh.	Eg.
	22	48		II.	Tr.	Eg.
12	4	23		I.	Sh.	In.
	4	39		I.	Tr.	In.
	6	39		I.*	Sh.	Eg.
	6	55		I.*	Tr.	Eg.
	22	3		III.	Sh.	In.
	23	2		III.	Tr.	In.
13	0	52		III.	Sh.	Eg.
	1	33	18.9	I.	Ec.	Dis.
	1	51		III.	Tr.	Eg.
	4	2		I.	Oc.	Re.
	14	47	32.7	II.*	Ec.	Dis.
	17	48		II.*	Oc.	Re.
	22	51		I.	Sh.	In.
	23	4		I.	Tr.	In.
14	1	8		I.	Sh.	Eg.
	1	20		I.	Tr.	Eg.
	20	1	53.3	I.	Ec.	Dis.
	22	28		I.	Oc.	Re.
15	8	57		II.*	Sh.	In.
	9	19		II.*	Tr.	In.
	11	34		II.*	Sh.	Eg.
	11	55		II.*	Tr.	Eg.
	17	20		I.*	Sh.	In.
	17	30		I.*	Tr.	In.
	19	36		I.	Sh.	Eg.
	19	46		I.	Tr.	Eg.
16	11	56	21.0	III.*	Ec.	Dis.
	14	30	32.9	I.*	Ec.	Dis.
	15	17		III.*	Oc.	Re.
	16	54		I.*	Oc.	Re.
17	4	5	0.0	II.	Ec.	Dis.
	6	55		II.*	Oc.	Re.
	11	48		I.*	Sh.	In.
	11	56		I.*	Tr.	In.
	14	5		I.*	Sh.	Eg.
	14	12		I.*	Tr.	Eg.
18	8	59	6.4	I.*	Ec.	Dis.
	11	19		I.*	Oc.	Re.
	22	15		II.	Sh.	In.
	22	26		II.	Tr.	In.
19	0	52		II.	Sh.	Eg.
	1	2		II.	Tr.	Eg.
	6	17		I.*	Sh.	In.
	6	22		I.*	Tr.	In.
	8	33		I.*	Sh.	Eg.
	8	38		I.*	Tr.	Eg.
20	2	3		III.	Sh.	In.
	2	18		III.	Tr.	In.
	3	27	48.2	I.	Ec.	Dis.
	4	53		III.	Sh.	Eg.
	5	6		III.	Tr.	Eg.
	5	45		I.*	Oc.	Re.
	17	22	34.7	II.*	Ec.	Dis.
	20	2		II.	Oc.	Re.
21	0	45		I.	Sh.	In.
	0	48		I.	Tr.	In.
	3	2		I.	Sh.	Eg.
	3	4		I.	Tr.	Eg.
	21	55		I.	Oc.	Dis.
22	0	11		I.	Oc.	Re.
22	11	33		II.*	Tr.	In.
	11	33		II.*	Sh.	In.
	14	10		II.*	Tr.	Eg.
	14	11		II.*	Sh.	Eg.
	19	14		I.	Tr.	In.
	19	14		I.	Sh.	In.
	21	30		I.	Tr.	Eg.
	21	30		I.	Sh.	Eg.
23	15	44		III.*	Oc.	Dis.
	16	21		I.*	Oc.	Dis.
	18	37	2.3	III.	Ec.	Re.
	18	37	3.8	I.	Ec.	Re.
24	6	40	3.3	II.*	Ec.	Dis.
	9	8		II.*	Oc.	Re.
	13	39		I.*	Tr.	In.
	13	43		I.*	Sh.	In.
	15	55		I.*	Tr.	Eg.
	15	59		I.*	Sh.	Eg.
25	10	47		I.*	Oc.	Dis.
	13	5	42.3	I.*	Ec.	Re.
26	0	40		II.	Tr.	In.
	0	51		II.	Sh.	In.
	3	17		II.	Tr.	Eg.
	3	29		II.	Sh.	Eg.
	8	5		I.*	Tr.	In.
	8	11		I.*	Sh.	In.
	10	21		I.*	Tr.	Eg.
	10	28		I.*	Sh.	Eg.
27	5	13		I.	Oc.	Dis.
	5	33		III.*	Tr.	In.
	6	3		III.*	Sh.	In.
	7	34	28.5	I.*	Ec.	Re.
	8	21		III.*	Tr.	Eg.
	8	54		III.*	Sh.	Eg.
	19	57	36.4	II.	Ec.	Dis.
	22	15		II.	Oc.	Re.
28	2	31		I.	Tr.	In.
	2	40		I.	Sh.	In.
	4	47		I.	Tr.	Eg.
	4	56		I.	Sh.	Eg.
	23	39		I.	Oc.	Dis.
29	2	3	9.5	I.	Ec.	Re.
	13	47		II.*	Tr.	In.
	14	10		II.*	Sh.	In.
	16	24		II.*	Tr.	Eg.
	16	47		II.*	Sh.	Eg.
	20	57		I.	Tr.	In.
	21	9		I.	Sh.	In.
	23	13		I.	Tr.	Eg.
	23	25		I.	Sh.	Eg.
30	18	5		I.*	Oc.	Dis.
	18	58		III.	Oc.	Dis.
	20	31	55.6	I.	Ec.	Re.
	22	37	34.3	III.	Ec.	Re.
31	9	15	4.7	II.*	Ec.	Dis.
	11	22		II.*	Oc.	Re.
	15	23		I.*	Tr.	In.
	15	37		I.*	Sh.	In.
	17	39		I.*	Tr.	Eg.
	17	54		I.*	Sh.	Eg.

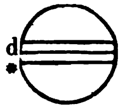
NOTE.—In. denotes ingress; Eg., egress; Dis., disappearance; Re., reappearance; Ec., eclipse.
Oc. denotes occultation; Tr., transit of the satellite; Sh., transit of the shadow; * Visible at Washington.

WASHINGTON MEAN TIME.

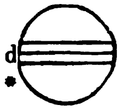
DECEMBER.

Phases of the Eclipses of the Satellites for an Inverting Telescope.

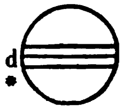
I.



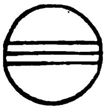
III.



II.



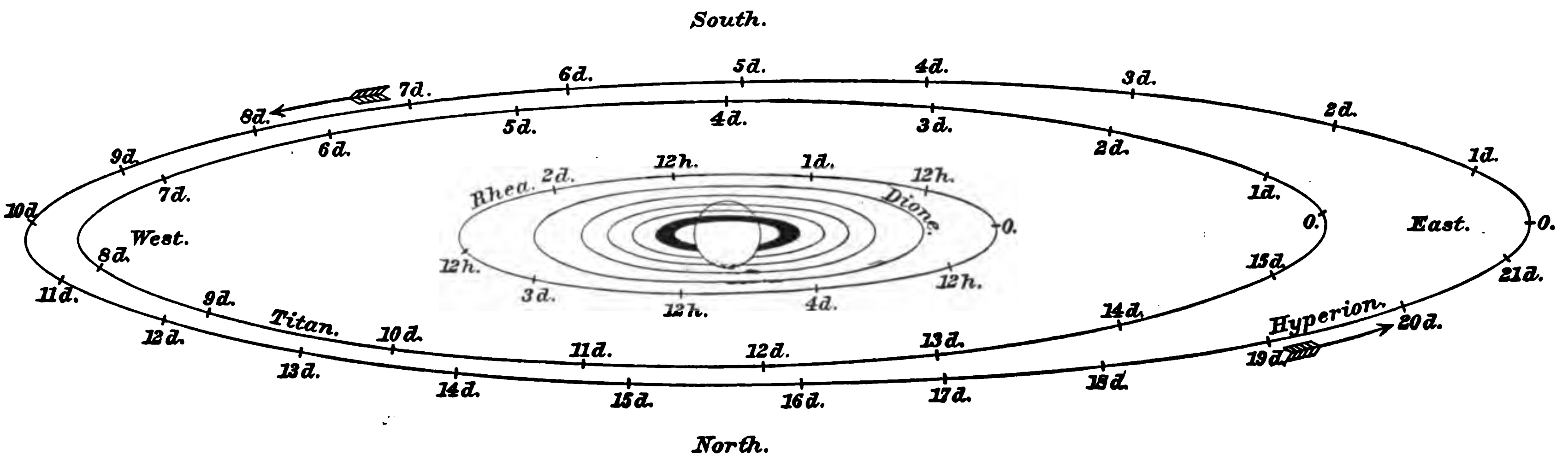
IV.



No Eclipse.

Configurations at 12h for an Inverting Telescope.

Day.	West.		East.
1	·3 2·	○	1· ·4
2	·2	○	·3 4· ·1 ●
3	1·	○	·2 ·3 4·
4		○	·12· 3· 4·
5	2· 1·	○	3· 4·
6	3· 4· ·2	○	1·
7	3· 4· ·1	○	2·
8	4· ·3 2·	○	1·
9	4· ·2 ·1	○	·3 ●
10	○ 1· ·4	○	·2 ·3
11	·4	○	·1 2· 3·
12	·4 2· 1·	○	3·
13	·4 3· ·2	○	·1
14	3· ·1	○ ·4	·2
15	·3 2·	○	1· ·4
16	·2 ·1	○	·4 ·3 ●
17	○ 1·	○	·2 ·3 ·4
18		○	·1 2· 3· ·4
19	2· 1·	○	3· 4·
20	3··2	○	·1 4·
21	3· 1·	○	·2 4·
22	○ 2· ·3	○	4· 1·
23	·24· ·1 ·3	○	
24	4·	○	1··2 ·3
25	4·	○	2· 3· .1 ●
26	4· 2· 1·	○	3·
27	·4 ·2 3·	○	·1
28	·4 3· 1·	○	·2
29	·4 ·3	○	2· 1·
30	2· ·1 ·3 ·4	○	
31		○	·2 1· ·4 ·3



APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN,

AT OPPOSITION IN 1894,

AS SEEN IN AN INVERTING TELESCOPE.

Names of the Satellites.	Mean Synodic Periods. d	h
I. Mimas.	0	22.6
II. Enceladus.	1	8.9
III. Tethys.	1	21.3
IV. Dione.	2	17.7
V. Rhea.	4	12.4
VI. Titan.	15	23.3
VII. Hyperion.	21	7.8
VIII. Iapetus.	79	22.0

WASHINGTON MEAN TIME OF GREATEST ELONGATION, ETC.

In the diagram on the preceding page, the points of the orbits marked "o" are those of the eastern elongation, as seen in an inverting telescope. The apparent positions of a satellite at any time may be marked on the diagram by counting around the orbit the interval in days and hours which has elapsed since the last east elongation. The times of these elongations may be found from the following tables. Mimas can be seen only within a few hours of each elongation: the time of every elongation visible at Washington is therefore given. The times of other elongations of any satellite in the same direction may be found by adding or subtracting any multiple of the period. For the three outer satellites the times of elongation and conjunction are given. The following abbreviations are used:—

E., East Elongation,
I., Inferior Conjunction (south of planet),
W., West Elongation,
S., Superior Conjunction (north of planet).

MIMAS.

Greatest Elongations Visible at Washington.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	1	18.6 W.	Feb.	4	16.8 W.	Mar.	9	16.3 W.	Apr.	12	14.4 W.	May	11	8.3 E.	June	28	9.8 E.
	2	17.2 W.		5	15.4 W.		10	14.9 W.		13	13.0 W.		16	12.7 W.		29	8.4 E.
	3	15.8 W.		6	14.0 W.		11	13.5 W.		14	11.7 W.		17	11.3 W.	July	5	11.4 W.
	8	20.2 E.		10	19.8 E.		12	12.2 W.		15	10.3 W.		18	9.9 W.		6	10.0 W.
	9	18.9 E.		11	18.4 E.		17	16.5 E.		19	16.1 E.		19	8.5 W.		7	8.7 W.
	10	17.5 E.		12	17.0 E.		18	15.2 E.		20	14.7 E.		24	12.9 E.		8	7.3 W.
	11	16.1 E.		13	15.7 E.		19	13.8 E.		21	13.3 E.		25	11.5 E.		14	10.3 E.
	12	14.7 E.		14	14.3 E.		20	12.4 E.		22	11.9 E.		26	10.2 E.		15	8.9 E.
	16	20.5 W.		15	12.9 E.		21	11.0 E.		23	10.5 E.		27	8.8 E.		16	7.5 E.
	17	19.1 W.		19	18.6 W.		25	16.7 W.		24	9.1 E.	June	1	13.2 W.		22	10.5 W.
	18	17.8 W.		20	17.2 W.		26	15.4 W.		28	14.9 W.		2	11.8 W.		23	9.2 W.
	19	16.4 W.		21	15.9 W.		27	14.0 W.		29	13.5 W.		3	10.4 W.		24	7.8 W.
	20	15.0 W.		22	14.5 W.		28	12.6 W.		30	12.2 W.		4	9.0 W.	Dec.	18	20.7 E.
	24	20.8 E.		23	13.1 W.		29	11.2 W.	May	1	10.8 W.		10	12.0 E.		19	19.3 E.
	25	19.4 E.		28	17.5 E.	Apr.	3	15.6 E.		2	9.4 W.		11	10.7 E.		20	17.9 E.
	26	18.0 E.	Mar.	1	16.1 E.		4	14.2 E.		3	8.0 W.		12	9.3 E.		21	16.5 E.
	27	16.6 E.		2	14.7 E.		5	12.8 E.		7	13.8 E.		18	12.3 W.		28	18.2 W.
	28	15.2 E.		3	13.3 E.		6	11.4 E.		8	12.4 E.		19	10.9 W.		29	16.8 W.
Feb.	2	19.6 W.		4	11.9 E.		7	10.0 E.		9	11.0 E.		20	9.5 W.		30	15.4 W.
	3	18.2 W.		8	17.7 W.		11	15.8 W.		10	9.7 E.		27	11.2 E.		31	14.1 W.

ENCELADUS.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	1	15.1 E.	Jan.	15	7.9 E.	Jan.	29	0.7 E.	Feb.	11	17.4 E.	Feb.	25	10.3 E.	Mar.	11	3.1 E.
	3	0.0 E.		16	16.8 E.		30	9.6 E.		13	2.4 E.		26	19.2 E.		12	12.0 E.
	4	8.8 E.		18	1.6 E.		31	18.4 E.		14	11.2 E.		28	4.0 E.		13	20.8 E.
	5	17.7 E.		19	10.5 E.	Feb.	2	3.3 E.		15	20.1 E.	Mar.	1	12.9 E.		15	5.7 E.
	7	2.6 E.		20	19.4 E.		3	12.2 E.		17	5.0 E.		2	21.8 E.		16	14.6 E.
	8	11.5 E.		22	4.3 E.		4	21.1 E.		18	13.9 E.		4	6.7 E.		17	23.5 E.
	9	20.4 E.		23	13.2 E.		6	6.0 E.		19	22.8 E.		5	15.6 E.		19	8.4 E.
	11	5.2 E.		24	22.0 E.		7	14.8 E.		21	7.6 E.		7	0.4 E.		20	17.2 E.
	12	14.1 E.		26	6.9 E.		8	23.7 E.		22	16.5 E.		8	9.3 E.		22	2.1 E.
	13	23.0 E.		27	15.8 E.		10	8.6 E.		24	1.4 E.		9	18.2 E.		23	11.0 E.

WASHINGTON MEAN TIME OF GREATEST ELONGATION

ENCELADUS—(*Concluded.*)

	d	h		d	h		d	h		d	h		d	h		d	h
Mar.	24	19.9 E.	Apr.	14	9.1 E.	May	4	22.3 E.	May	25	11.5 E.	June	15	0.7 E.	July	5	13.9 E.
	26	4.8 E.		15	18.0 E.		6	7.2 E.		26	20.4 E.		16	9.6 E.		6	22.8 E.
	27	13.6 E.		17	2.8 E.		7	16.0 E.		28	5.2 E.		17	18.4 E.		8	7.6 E.
	28	22.5 E.		18	11.7 E.		9	0.9 E.		29	14.1 E.		19	3.3 E.		9	16.5 E.
	30	7.4 E.		19	20.6 E.		10	9.8 E.		30	23.0 E.		20	12.2 E.		11	1.4 E.
	31	16.3 E.		21	5.5 E.		11	18.7 E.	June	1	7.9 E.		21	21.1 E.	Dec.	18	10.6 E.
Apr.	2	1.2 E.		22	14.4 E.		13	3.6 E.		2	16.8 E.		23	6.0 E.		19	19.5 E.
	3	10.0 E.		23	23.2 E.		14	12.4 E.		4	1.6 E.		24	14.8 E.		21	4.4 E.
	4	18.9 E.		25	8.1 E.		15	21.3 E.		5	10.5 E.		25	23.7 E.		22	13.3 E.
	6	3.8 E.		26	17.0 E.		17	6.2 E.		6	19.4 E.		27	8.6 E.		23	22.2 E.
	7	12.7 E.		28	1.9 E.		18	15.1 E.		8	4.3 E.		28	17.5 E.		25	7.1 E.
	8	21.6 E.		29	10.8 E.		20	0.0 E.		9	13.1 E.		30	2.4 E.		26	16.0 E.
	10	6.4 E.		30	19.6 E.		21	8.8 E.		10	22.0 E.	July	1	11.2 E.		28	0.9 E.
	11	15.3 E.	May	2	4.5 E.		22	17.7 E.		12	6.9 E.		2	20.1 E.		29	9.8 E.
	13	0.2 E.		3	13.4 E.		24	2.6 E.		13	15.8 E.		4	5.0 E.		30	18.7 E.

TETHYS.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	2	12.6 E.	Feb.	5	11.9 E.	Mar.	11	11.3 E.	Apr.	14	10.6 E.	May	18	10.0 E.	June	21	9.3 E.
	4	9.9 E.		7	9.2 E.		13	8.6 E.		16	7.9 E.		20	7.3 E.		23	6.6 E.
	6	7.2 E.		9	6.5 E.		15	5.9 E.		18	5.2 E.		22	4.6 E.		25	3.9 E.
	8	4.5 E.		11	3.8 E.		17	3.2 E.		20	2.5 E.		24	1.9 E.		27	1.2 E.
	10	1.8 E.		13	1.1 E.		19	0.5 E.		21	23.8 E.		25	23.2 E.		28	22.5 E.
	11	23.1 E.		14	22.4 E.		20	21.8 E.		23	21.1 E.		27	20.5 E.		30	19.8 E.
	13	20.4 E.		16	19.7 E.		22	19.1 E.		25	18.4 E.		29	17.8 E.	July	2	17.1 E.
	15	17.7 E.		18	17.0 E.		24	16.4 E.		27	15.7 E.		31	15.1 E.		4	14.4 E.
	17	15.0 E.		20	14.3 E.		26	13.7 E.		29	13.0 E.	June	2	12.4 E.		6	11.7 E.
	19	12.3 E.		22	11.6 E.		28	11.0 E.	May	1	10.3 E.		4	9.7 E.		8	9.0 E.
	21	9.6 E.		24	8.9 E.		30	8.3 E.		3	7.6 E.		6	6.9 E.		10	6.3 E.
	23	6.9 E.		26	6.2 E.	Apr.	1	5.6 E.		5	4.9 E.		8	4.2 E.	Dec.	19	16.9 E.
	25	4.2 E.		28	3.5 E.		3	2.9 E.		7	2.2 E.		10	1.5 E.		21	14.2 E.
	27	1.5 E.	Mar.	2	0.8 E.		5	0.2 E.		8	23.5 E.		11	22.8 E.		23	11.6 E.
	28	22.8 E.		3	22.1 E.		6	21.4 E.		10	20.8 E.		13	20.1 E.		25	8.9 E.
	30	20.1 E.		5	19.4 E.		8	18.7 E.		12	18.1 E.		15	17.4 E.		27	6.2 E.
Feb.	1	17.3 E.		7	16.7 E.		10	16.0 E.		14	15.4 E.		17	14.7 E.		29	3.5 E.
	3	14.6 E.		9	14.0 E.		12	13.3 E.		16	12.7 E.		19	12.0 E.		31	0.9 E.

DIONE.

	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	2	1.6 E.	Feb.	3	21.7 E.	Mar.	8	17.7 E.	Apr.	10	13.8 E.	May	13	9.9 E.	June	15	6.0 E.
	4	19.2 E.		6	15.3 E.		11	11.4 E.		13	7.5 E.		16	3.6 E.		17	23.7 E.
	7	12.9 E.		9	9.0 E.		14	5.1 E.		16	1.2 E.		18	21.3 E.		20	17.4 E.
	10	6.6 E.		12	2.7 E.		16	22.8 E.		18	18.9 E.		21	14.9 E.		23	11.0 E.
	13	0.3 E.		14	20.3 E.		19	16.4 E.		21	12.5 E.		24	8.6 E.		26	4.7 E.
	15	17.9 E.		17	14.0 E.		22	10.1 E.		24	6.2 E.		27	2.3 E.		28	22.4 E.
	18	11.6 E.		20	7.7 E.		25	3.8 E.		26	23.9 E.		29	20.0 E.	July	1	16.1 E.
	21	5.3 E.		23	1.4 E.		27	21.5 E.		29	17.6 E.	June	1	13.6 E.		4	9.7 E.
	23	23.0 E.		25	19.0 E.		30	15.1 E.	May	2	11.2 E.		4	7.3 E.	Dec.	21	5.0 E.
	26	16.6 E.		28	12.7 E.	Apr.	2	8.8 E.		5	4.9 E.		7	1.0 E.		23	22.7 E.
	29	10.3 E.	Mar.	3	6.4 E.		5	2.5 E.		7	22.6 E.		9	18.7 E.		26	16.5 E.
Feb.	1	4.0 E.		6	0.1 E.		7	20.2 E.		10	16.3 E.		12	12.3 E.		29	10.2 E.

RHEA.		TITAN.		HYPERION.	
d h	d h	d h	d h	d h	d h
Jan. 2 5.9 E.	Apr. 11 14.3 E.	Jan. 3 9.1 S.	Mar. 31 18.3 I.	Jan. 5 16.8 E.	May 3 11.7 W.
6 18.3 E.	16 2.6 E.	7 4.4 E.	Apr. 4 21.3 W.	12 1.0 I.	7 21.2 S.
11 6.7 E.	20 15.0 E.	11 2.1 I.	8 23.2 S.	17 9.4 W.	13 1.9 E.
15 19.0 E.	25 3.4 E.	15 5.9 W.	12 17.9 E.	21 19.2 S.	19 9.6 I.
20 7.4 E.	29 15.8 E.	19 8.0 S.	16 15.4 I.	26 23.0 E.	24 16.3 W.
24 19.8 E.	May 4 4.2 E.	23 3.2 E.	20 18.4 W.	Feb. 2 7.5 I.	29 1.7 S.
29 8.2 E.	8 16.5 E.	27 0.9 I.	24 20.7 S.	7 16.1 W.	June 3 6.7 E.
Feb. 2 20.6 E.	13 4.9 E.	31 4.5 W.	28 15.4 E.	12 1.7 S.	9 14.9 I.
7 8.9 E.	17 17.3 E.	Feb. 4 6.9 S.	May 2 12.8 I.	17 5.6 E.	14 21.6 W.
11 21.3 E.	22 5.7 E.	8 1.8 E.	6 15.9 W.	23 13.8 I.	19 7.1 S.
16 9.7 E.	26 18.1 E.	11 23.4 I.	10 18.1 S.	28 22.1 W.	24 12.5 E.
20 22.1 E.	31 6.4 E.	16 2.9 W.	14 12.7 E.	Mar. 5 7.6 S.	30 21.8 I.
25 10.5 E.	June 4 18.8 E.	20 5.6 S.	18 10.3 I.	10 11.6 E.	July 6 4.4 W.
Mar. 1 22.8 E.	9 7.2 E.	24 0.1 E.	22 13.2 W.	16 20.2 I.	10 14.2 S.
6 11.2 E.	13 19.6 E.	27 22.4 I.	26 15.6 S.	22 3.4 W.	15 19.9 E.
10 23.6 E.	18 7.9 E.	Mar. 4 1.8 W.	30 10.2 E.	26 12.7 S.	Nov. 27 18.5 I.
15 12.0 E.	22 20.3 E.	8 3.7 S.	June 3 7.9 I.	31 16.9 E.	Dec. 2 18.8 W.
20 0.4 E.	27 8.7 E.	11 22.8 E.	7 10.8 W.	Apr. 7 0.1 I.	7 5.7 S.
24 12.7 E.	July 1 21.1 E.	15 20.3 I.	11 13.3 S.	12 7.1 W.	13 2.0 E.
29 1.1 E.	Dec. 20 17.6 E.	19 23.8 W.	15 8.3 E.	16 16.8 S.	19 4.2 I.
Apr. 2 13.5 E.	25 6.2 E.	24 1.8 S.	Dec. 24 10.8 E.	21 21.2 E.	24 4.0 W.
7 1.9 E.	29 18.7 E.	27 20.8 E.	28 8.6 I.	28 4.8 I.	28 14.5 S.

IAPETUS.

d h	d h	d h	d h	d h	d h
Jan. 20 5.2 E.	Feb. 27 13.9 W.	Apr. 8 21.9 E.	May 16 17.2 W.	June 26 4.9 E.	Dec. 5 13.2 E.
Feb. 7 11.4 I.	Mar. 19 10.8 S.	26 22.1 I.	June 5 16.6 S.	July 14 6.2 I.	23 19.0 I.

THE APPARENT ELEMENTS OF SATURN'S RINGS.

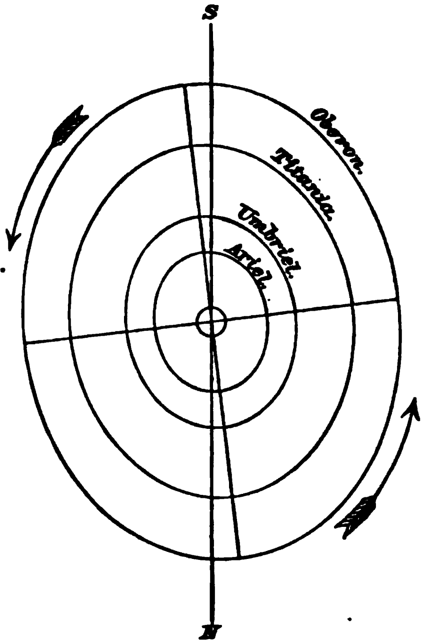
Greenwich Mean Noon.	a	b	p	l	l′	u	u′
	Outer Major Axis.	Outer Minor Axis.	Inclination of Northern Semi-Minor Axis to Circle of Declination from North to East.	The Elevation of the Earth above the Plane of the Ring.	The Elevation of the Sun above the Plane of the Ring.	Earth's Longitude from Saturn counted on Plane of Ring from the Ring's Ascending Node on	
						Equator.	Ecliptic.
Jan. 0	38″.03	9″.15	− 1° 40′.8	+ 13° 55′.1	+ 11° 34′.9	256° 10′.3	213° 43′.7
20	39.35	9.62	− 1 35.1	+ 14 8.9	+ 11 50.9	256 58.0	214 32.0
Feb. 9	40.72	9.92	− 1 34.1	+ 14 6.6	+ 12 6.8	257 6.5	214 40.6
Mar. 1	41.93	10.01	− 1 37.7	+ 13 48.6	+ 12 22.7	256 35.7	214 9.8
21	42.79	9.84	− 1 45.1	+ 13 18.3	+ 12 38.5	255 32.1	213 6.4
Apr. 10	43.13	9.48	− 1 54.8	+ 12 41.8	+ 12 54.0	254 9.5	211 43.8
30	42.87	8.99	− 2 4.6	+ 12 6.2	+ 13 9.7	252 45.0	210 19.4
May 20	42.07	8.50	− 2 12.5	+ 11 39.2	+ 13 25.2	251 36.0	209 10.5
June 9	40.90	8.11	− 2 17.2	+ 11 26.0	+ 13 40.5	250 55.3	208 29.9
29	39.57	7.88	− 2 17.8	+ 11 29.2	+ 13 55.8	250 49.9	208 24.5
July 19	38.23	7.82	− 2 14.3	+ 11 48.7	+ 14 11.0	251 20.8	208 55.6
Aug. 8	37.04	7.93	− 2 6.7	+ 12 22.4	+ 14 26.0	252 25.6	210 0.4
28	35.98	8.16	− 1 56.0	+ 13 6.9	+ 14 40.9	254 0.1	211 35.0
Sept. 17	35.37	8.54	− 1 42.5	+ 13 59.0	+ 14 55.7	255 55.1	213 30.1
Oct. 7	34.98	9.00	− 1 27.0	+ 14 54.5	+ 15 10.4	258 6.4	215 41.5
27	34.91	9.52	− 1 10.4	+ 15 49.5	+ 15 24.9	260 25.3	218 0.5
Nov. 16	35.18	10.10	− 0 53.7	+ 16 40.8	+ 15 39.4	262 43.4	220 18.7
Dec. 6	35.81	10.72	− 0 38.1	+ 17 25.0	+ 15 53.8	264 51.6	222 27.0
26	36.66	11.32	− 0 24.7	+ 17 59.4	+ 16 8.0	266 40.4	224 15.8
31	36.93	11.47	− 0 22.0	+ 18 6 1	+ 16 11.5	267 2.8	224 38.3

The factor to be multiplied by *a* and *b* to obtain the axes of—

The inner ellipse of the outer ring = 0.8801 log factor = 9.9445
The outer ellipse of the inner ring = 0.8599 log factor = 9.9344
The inner ellipse of the inner ring = 0.6650 log factor = 9.8228
The inner ellipse of the dusky ring = 0.5486 log factor = 9.7392

Note.—The positive sign of *l* indicates that the visible surface of the ring is the northern one.

Date.	Position Angle.	App. Distances. Ariel.	App. Distances. Umbriel.
Feb. 2,	2°.5	14″.2	19″.8
May 3,	3.8	15.0	20.9
July 16,	5.0	14.4	20.1



Date.	Position Angle.	App. Distances. Titania.	App. Distances. Oberon.
Feb. 2,	2°.5	32″.4	43″.4
May 3,	3.8	34.3	45.8
July 16,	5.0	33.0	44.1

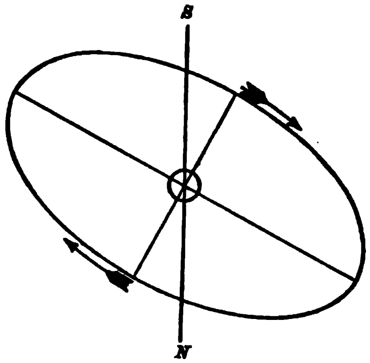
APPARENT ORBITS OF THE SATELLITES OF URANUS IN 1894,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

ARIEL.						UMBRIEL.						TITANIA.						OBERON.			
North.			South.			North.			South.			North.			South.			North and South.			
	d	h		d	h		d	h		d	h		d	h		d	h		d	h	
Jan.	24	17.4	Jan.	28	12.1	Jan.	23	22.3	Jan.	26	0.0	Jan.	22	5.5	Jan.	17	21.0	Jan.	25	22.5	N.
Feb.	1	6.8	Feb.	5	1.6	Feb.	1	5.2	Feb.	3	7.0		30	22.5		26	14.0	Feb.	1	16.2	S.
	8	20.3		12	15.0		9	12.2		11	13.9	Feb.	8	15.4	Feb.	4	7.0		8	9.8	N.
	16	9.7		20	4.5		17	19.1		19	20.8		17	8.4		12	23.9		15	3.4	S.
	23	23.2		27	18.0		26	2.0		28	3.7		26	1.4		21	16.9		21	21.0	N.
Mar.	3	12.6	Mar.	7	7.5	Mar.	6	8.9	Mar.	8	10.7	Mar.	6	18.4	Mar.	2	9.9		28	14.6	S.
	11	2.0		14	20.9		14	15.9		16	17.6		15	11.4		11	2.9	Mar.	7	8.2	N.
	18	15.5		22	10.4		22	22.8		25	0.5		24	4.3		19	19.9		14	1.8	S.
	26	4.9		29	23.9		31	5.7	Apr.	2	7.5	Apr.	1	21.3		28	12.8		20	19.4	N.
Apr.	2	18.4	Apr.	6	13.3	Apr.	8	12.7		10	14.4		10	14.3	Apr.	6	5.8		27	13.0	S.
	10	7.8		14	2.8		16	19.6		18	21.3		19	7.3		14	22.8	Apr.	3	6.6	N.
	17	21.2		21	16.3		25	2.5		27	4.3		28	0.3		23	15.8		10	0.2	S.
	25	10.7		29	5.7	May	3	9.5	May	5	11.2	May	6	17.2	May	2	8.7		16	17.8	N.
May	3	0.1	May	6	19.2		11	16.4		13	18.1		15	10.2		11	1.7		23	11.5	S.
	10	13.6		14	8.7		19	23.4		22	1.1		24	3.2		19	18.7		30	5.1	N.
	18	3.0		21	22.1		28	6.3		30	8.1	June	1	20.2		28	11.7	May	6	22.7	S.
	25	16.4		29	11.6	June	5	13.3	June	7	15.0		10	13.1	June	6	4.7		13	16.3	N.
June	2	5.9	June	6	1.1		13	20.2		15	21.9		19	6.1		14	21.6		20	9.9	S.
	9	19.3		13	14.5		22	3.2		24	4.9		27	23.1		23	14.6		27	3.6	N.
	17	8.8		21	4.0		30	10.1	July	2	11.9	July	6	16.1	July	2	7.6	June	2	21.2	S.
	24	22.2		28	17.5	July	8	17.2		10	18.8		15	9.1		11	0.6		9	14.8	N.
July	2	11.6	July	6	6.9		17	0.2		19	1.8		24	2.0		19	17.5		16	8.5	S.
	10	1.1		13	20.4		25	7.1		27	8.7	Aug.	1	19.0		28	10.5		23	2.1	N.
	17	14.5		21	9.8	Aug.	2	14.1	Aug.	4	15.7		10	12.0	Aug.	6	3.5		29	19.7	S.
	25	4.0		28	23.3		10	21.0		12	22.6		19	5.0		14	20.5	July	6	13.3	N.

	d	h		d	h
Period of Ariel,	2	12.489	Period of Titania,	8	16.942
Period of Umbriel,	4	3.460	Period of Oberon,	13	11.119

NOTE.—For Ariel only every third elongation is given, and for Umbriel every alternate one. The intermediate ones may be found by adding multiples of the period of the satellite.



Date.		Position Angle.	Apparent Distance.
		°	″
Feb.	6,	245.9	16.6
Oct.	8,	250.9	16.7
Dec.	6,	249.5	16.9

APPARENT ORBIT OF THE SATELLITE OF NEPTUNE IN 1894,
AS SEEN IN AN INVERTING TELESCOPE.

WASHINGTON MEAN TIME OF GREATEST ELONGATION.

North East.			South West.			North East.			South West.			North East.			South West.		
	d	h		d	h		d	h		d	h		d	h		d	h
Jan.	4	20.0	Jan.	1	21.6	Aug.	21	22.6	Aug.	24	21.1	Oct.	31	11.8	Nov.	3	10.4
	10	17.1		7	18.7		27	19.7		30	18.2	Nov.	6	8.9		9	7.5
	16	14.2		13	15.8	Sept.	2	16.8	Sept.	5	15.3		12	6.0		15	4.6
	22	11.3		19	12.9		8	13.9		11	12.4		18	3.1		21	1.7
	28	8.4		25	10.0		14	11.0		17	9.5		24	0.2		26	22.8
Feb.	3	5.5		31	7.1		20	8.1		23	6.6		29	21.3	Dec.	2	19.9
	9	2.6	Feb.	6	4.2		26	5.2		29	3.7	Dec.	5	18.4		8	17.0
	14	23.7		12	1.3	Oct.	2	2.3	Oct.	5	0.9		11	15.5		14	14.1
	20	20.8		17	22.4		7	23.4		10	22.0		17	12.6		20	11.2
	26	17.9		23	19.5		13	20.5		16	19.1		23	9.7		26	8.3
Mar.	4	15.1	Mar.	1	16.7		19	17.6		22	16.2		29	6.8	Jan.	1	5.4
	10	12.2		7	13.8		25	14.7		28	13.2	Jan.	4	3.9			

The above times are those of each passage of the satellite through an apsis of its apparent orbit. The position of the satellite at any other time may be found by measuring around the orbit from the apsis last passed through, remembering that the radius vector of the satellite describes equal areas in equal times.

Period of the satellite of Neptune, $5^d\,21^h.045$.

NOTE.—In the preceding diagrams the central circle represents the planet, and is on the same scale as the orbits.

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m			°	′
Jan.	2	6	2	♀	in ☊		
	2	16	1	☌ ♂ ☽	. . . . ♂ +	4	0
	5	3	1	☌ ☿ ☽	. . . . ☿ +	4	17
	9	22	25	☌ ♀ ☽	. . . . ♀ +	5	6
	10	6	–	♀	Greatest brilliancy.		
	10	12	53	☿	in Aphelion.		
	14	6	17	□ ♄ ☉			
	15	4	28	♃	Stationary.		
	16	7	1	☌ ♃ ☽	. . . . ♃ —	4	11
	17	15	0	☌ ♆ ☽	. . . . ♆ —	5	53
	23	13	46	♀	Stationary.		
	25	22	44	♂	in ☋		
	27	0	7	☌ ♄ ☽	. . . . ♄ +	4	3
	28	14	7	☌ ♅ ☽	. . . . ♅ +	3	21
	28	19	28	☌ ☿ ☉	Superior.		
	30	22	24	☿	Greatest Hel. Lat. S.		
	31	13	38	☌ ♂ ☽	. . . . ♂ +	4	41
Feb.	2	23	6	♄	Stationary.		
	3	7	56	□ ♅ ☉			
	4	19	37	♀	in Perihelion.		
	5	15	42	☌ ☿ ☽	. . . . ☿ —	2	5
	6	3	55	☌ ♀ ☽	. . . . ♀ +	11	20
	8	10	33	☌ ☿ ♀	. . . . ☿ —	9	49
	10	14	44	□ ♃ ☉			
	12	16	7	☌ ♃ ☽	. . . . ♃ +	4	24
	13	22	20	☌ ♆ ☽	. . . . ♆ —	6	3
	15	15	56	☌ ♀ ☉	Inferior.		
	17	15	37	♅	Stationary.		
	18	22	22	☿	in ☊		
	19	5	32	♆	Stationary.		
	21	6	–	☿	Greatest brilliancy.		
	23	8	54	☌ ♄ ☽	. . . . ♄ +	4	23
	23	12	38	☿	in Perihelion.		
	24	22	50	☌ ♅ ☽	. . . . ♅ +	3	36
	25	10	45	☿	Greatest elong. E.	18	8
	26	13	28	☌ ♀	β Aquarii . . ♀ —	0	18
	26	18	0	♀	Greatest Hel. Lat. N.		
	28	15	28	□ ♆ ☉			
Mar.	1	12	21	☌ ♂ ☽	. . . . ♂ +	4	44
	3	18	17	☿	Stationary.		
	4	10	31	☌ ♀ ☽	. . . . ♀ +	12	28
	5	19	50	☿	Greatest Hel. Lat. N.		
	7	0	6	♀	Stationary.		
	7	14	32	☌ ☿ ☽	. . . . ☿ +	5	10
	12	3	32	☌ ♃ ☽	. . . . ♃ —	4	40
	13	4	12	☌ ♆ ☽	. . . . ♆ —	6	11
	13	15	10	☌ ☿ ☉	Inferior.		
	19	21	51	☉	enters ♈, Spring com.		
	20	–	–	☽	partly ecl'd, invis. at Wash.		
	22	10	–	♀	Greatest brilliancy.		
	22	15	53	☌ ♄ ☽	. . . . ♄ +	4	24
	24	7	4	☌ ♅ ☽	. . . . ♅ +	3	39
	26	1	40	☿	Stationary.		
	29	7	16	☿	in ☋		
Mar.	30	12	30	☌ ♂ ☽	. . . . ♂ +	4	2
Apr.	1	15	50	☌ ♀ ☽	. . . . ♀ +	6	55
	3	6	29	☌ ☿ ☽	. . . . ☿ +	1	7
	4	15	9	☌ ♀	θ Aquarii . . ♀ —	0	19
	5	–	–	☉	Ann. eclip., invis. at Wash.		
	8	12	17	☿	in Aphelion.		
	8	18	6	☌ ♃ ☽	. . . . ♃ —	4	51
	9	10	49	☌ ♆ ☽	. . . . ♆ —	6	11
	10	10	20	☿	Greatest elong. W.	27	40
	11	0	53	☍ ♄ ☉			
	18	20	37	☌ ♄ ☽	. . . . ♄ +	4	14
	20	13	31	☌ ♅ ☽	. . . . ♅ +	3	29
	23	19	24	♀	in ☋		
	26	16	19	♀	Greatest elong. W.	46	10
	26	20	3	☌ ♅	α^2 Libræ . . ♅ +	0	4
	28	13	52	☌ ♂ ☽	. . . . ♂ +	2	26
	28	21	42	☿	Greatest Hel. Lat. S.		
May	1	5	59	☌ ♀ ☽	. . . . ♀ +	0	42
	3	2	36	☍ ♅ ☉			
	3	16	47	☌ ☿ ☽	. . . . ☿ —	4	1
	6	11	46	☌ ♃ ☽	. . . . ♃ —	4	59
	6	19	44	☌ ♆ ☽	. . . . ♆ —	6	8
	10	18	52	♄	Greatest Hel. Lat. N.		
	15	23	47	☌ ♄ ☽	. . . . ♄ +	4	2
	17	18	54	☌ ♅ ☽	. . . . ♅ +	3	28
	17	22	0	☿	in ☊		
	19	22	36	☌ ☿ ☉	Superior.		
	22	11	55	☿	in Perihelion.		
	22	20	–	☿	Greatest brilliancy.		
	25	15	13	☌ ☿ ♃	. . . . ☿ +	1	45
	26	6	9	☌ ☿ ♆	. . . . ☿ +	2	49
	27	15	10	☌ ♂ ☽	. . . . ♂ —	0	1
	28	0	46	♀	in Aphelion.		
	31	3	52	☌ ♀ ☽	. . . . ♀ —	4	15
June	1	9	6	☌ ♃ ♆	. . . . ♃ +	0	59
	1	18	53	☿	Greatest Hel. Lat. N.		
	3	4	22	☌ ♆ ☉			
	3	6	58	☌ ♆ ☽	. . . . ♆ —	6	6
	3	7	33	☌ ♃ ☽	. . . . ♃ —	5	8
	3	21	3	☌ ♃ ☉			
	4	11	24	☌ ☿ ☽	. . . . ☿ —	2	56
	12	3	33	☌ ♄ ☽	. . . . ♄ +	4	1
	13	23	1	☌ ♅ ☽	. . . . ♅ +	3	30
	16	19	0	□ ♂ ☉			
	20	16	2	♀	Greatest Hel. Lat. S.		
	20	17	56	☉	enters ♋, Summer com.		
	21	15	40	♄	Stationary.		
	22	14	37	☿	Greatest elong. E.	25	16
	25	6	31	☿	in ☋		
	25	13	40	☌ ♂ ☽	. . . . ♂ —	2	51
	29	22	35	☌ ♀ ☽	. . . . ♀ —	6	20
	30	19	4	☌ ♆ ☽	. . . . ♆ —	6	11
July	1	3	58	☌ ♃ ☽	. . . . ♃ —	5	17
	1	17	13	♂	Greatest Hel. Lat. N.		

WASHINGTON MEAN TIME.

PLANETARY CONSTELLATIONS.

	d	h	m		°	′
July	2	16	14	⊕ in Aphelion.		
	3	21	48	☌ ☿ ☽ .... ☿ —	6	39
	.5	11	33	☿ in Aphelion.		
	5	20	36	☿ Stationary.		
	9	10	3	☌ ♄ ☽ .... ♄ +	4	11
	10	9	25	□ ♄ ☉		
	11	3	51	☌ ♅ ☽ .... ♅ +	3	40
	11	12	46	☌ ♀ ♆ .... ♀ —	0	9
	19	11	32	♅ Stationary.		
	19	15	20	☌ ♀ ♃ .... ♀ —	0	51
	20	5	20	☌ ☿ ☉ Inferior.		
	24	5	39	☌ ♂ ☽ .... ♂ —	5	20
	25	20	59	☿ Greatest Hel. Lat. S.		
	25	23	3	♂ in Perihelion.		
	27	19	5	☌ ♀ μ Geminor. ♀ —	0	3
	28	23	17	☌ ♃ ☽ .... ♃ —	5	28
	29	14	26	☌ ♀ ☽ .... ♀.—	5	53
	30	15	30	☿ Stationary.		
	30	16	25	☌ ☿ ☽ .... ☿ —	8	36
Aug.	3	1	29	□ ♅ ☉		
	5	20	22	☌ ♄ ☽ .... ♄ +	4	27
	7	10	54	☌ ♅ ☽ .... ♅ +	3	54
	7	20	37	☌ ♀ δ Geminor.. ♀ —	0	9
	8	12	6	☿ Greatest elong. W.	18	57
	13	21	20	☿ in ☊		
	14	22	50	♀ in ☊		
	18	11	8	☿ in Perihelion.		
	18	18	–	☿ Greatest brilliancy.		
	21	10	43	☌ ♂ ☽ .... ♂ —	6	53
	24	14	57	☌ ♆ ☽ .... ♆ —	6	33
	25	15	44	☌ ♃ ☽ .... ♃ —	5	36
	28	8	15	☌ ♀ ☽ .... ♀ —	3	35
	28	18	26	☿ Greatest Hel. Lat. N.		
	29	20	10	☌ ☿ ☽ .... ☿ —	0	44
Sept.	2	10	1	☌ ♄ ☽ .... ♄ +	4	43
	2	13	9	☌ ☿ ☉ Superior.		
	3	20	43	☌ ♅ ☽ .... ♅ +	4	6
	17	18	26	□ ♆ ☉		
	14	–	–	☽ partly eclip'd vis. at Wash.		
	14	22	22	♂ Stationary.		
	17	7	27	♀ in Perihelion.		
	17	23	41	☌ ♂ ☽ .... ♂ —	7	9
	18	3	38	♆ Stationary.		
	20	21	8	☌ ♆ ☽ .... ♆ —	6	39
	21	5	53	☿ in ☋		
	22	4	1	☌ ♃ ☽ .... ♃ —	5	38
	22	8	20	☉ enters ♎, Autumn com.		
	27	7	43	☌ ♀ ☽ .... ♀ +	0	20
	27	16	21	□ ♃ ☉		
	28	–	–	☉ Total eclip. invis. at Wash.		
	30	1	15	☌ ☿ ☽ .... ☿ +	1	21
	30	1	23	☌ ♄ ☽ .... ♄ +	4	56
	30	2	32	☌ ☿ ♄ .... ☿ —	3	35
Oct.	1	10	47	☿ in Aphelion.		
Oct.	4	4	4	☌ ♅ α² Libræ .. ♅	0	0
	8	23	48	☌ ♀ η Virginis . ♀ +	0	7
	9	10	51	♀ Greatest Hel. Lat. N.		
	13	18	57	☌ ☿ ♅ .... ☿ —	3	2
	14	19	23	☌ ♂ ☽ .... ♂ —	5	31
	18	2	14	☌ ♆ ☽ .... ♆ —	6	37
	18	17	25	☿ Greatest elong. E.	24	31
	19	11	57	☌ ♃ ☽ .... ♃ —	5	33
	20	5	1	☍ ♂ ☉		
	20	17	33	☌ ♄ ☉		
	21	20	14	☿ Greatest Hel. Lat. S.		
	23	19	31	♃ Stationary.		
	27	11	27	☌ ♀ ☽ .... ♀ +	3	53
	27	16	33	☌ ♄ ☽ .... ♄ +	5	10
	28	20	48	☌ ♅ ☽ .... ♅ +	4	15
	29	17	12	☌ ☿ ☽ .... ☿ +	1	38
	29	22	59	☌ ♀ ♄ .... ♀ —	1	6
	30	8	10	☿ Stationary.		
Nov.	7	8	23	☌ ♅ ☉		
	9	20	7	☿ in ☊		
	10	1	26	☌ ☿ ☉ Inferior.		
	10	–	–	Transit of ☿ visible at Wash.		
	10	13	48	☌ ♂ ☽ .... ♂ —	3	2
	11	21	35	☌ ♀ ☉ .... ♀ +	0	32
	11	23	13	☌ ☿ ♀ .... ☿ —	0	8
	11	0	56	☌ ☿ ♅ .... ☿ +	0	26
	14	8	30	☌ ♆ ☽ .... ♆ —	6	30
	14	10	24	☿ in Perihelion.		
	15	16	56	☌ ♃ ☽ .... ♃ —	5	22
	19	1	33	☿ Stationary.		
	22	9	2	♂ Stationary.		
	24	5	55	☌ ♄ ☽ .... ♄ +	5	30
	24	17	37	☿ Greatest Hel. Lat. N.		
	25	3	18	☌ ☿ ☽ .... ☿ +	6	25
	25	7	43	☌ ♅ ☽ .... ♅ +	4	20
	25	15	–	☿ Greatest brilliancy.		
	26	3	23	♂ in ☊		
	26	16	1	☌ ♀ ☽ .... ♀ +	5	1
	26	23	50	☿ Greatest elong. W.	20	10
	27	20	1	☌ ☿ ♅ .... ☿ +	2	4
	29	22	9	☌ ♀ ☉ Superior.		
Dec.	4	12	12	♀ in ☋		
	5	18	32	☍ ♆ ☉		
	8	0	59	☌ ♂ ☽ .... ♂ —	1	53
	9	11	58	☌ ☿ β¹ Scorpii . ☿ +	0	3
	11	17	5	☌ ♆ ☽ .... ♆ —	6	28
	12	21	24	♂ ♃ ☽ .... ♃ —	5	14
	18	5	1	☿ in ☋		
	21	3	1	☉ enters ♑, Winter com.		
	21	16	52	☌ ♄ ☽ .... ♄ +	5	56
	22	8	43	☍ ♃ ☉		
	22	16	45	☌ ♅ ☽ .... ♅ +	4	33
	25	15	16	☌ ☿ ☽ .... ☿ +	4	10
	26	22	26	☌ ♀ ☽ .... ♀ +	3	58
	28	10	4	☿ in Aphelion.		

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Åbo	+ 60 26 56.8	− 9 53.5	9.998902	− 6 37 18.45	− 1 29 6.41
Adelaide	− 34 55 33.8	+ 10 47.6	9.999527	−14 22 32.34	− 9 14 20.30
Albany	+ 42 39 49.5	− 11 28.2	9.999336	− 0 13 12.87	+ 4 54 59.17
Alfred (N. Y.)	+ 42 15 19.8	− 11 27.2	9.999346	+ 0 2 55.00	+ 5 11 7.04
Algier	+ 36 45 2.7	− 11 1.6	9.999483	− 5 20 23.43	− 0 12 11.39
Allegheny	+ 40 27 41.6	− 11 21.6	9.999391	+ 0 11 50.89	+ 5 20 2.93
Altona	+ 53 32 45.3	− 11 0.8	9.999063	− 5 47 58.39	− 0 39 46.35
Amherst	+ 42 22 17.1	− 11 27.5	9.999343	− 0 18 7.37	+ 4 50 4.67
Annapolis	+ 38 58 53.5	− 11 15.0	9.999428	− 0 2 15.60	+ 5 5 56.44
Ann Arbor	+ 42 16 48.0	− 11 27.3	9.999346	+ 0 26 43.10	+ 5 34 55.14
Arcetri	+ 43 45 14.4	− 11 29.9	9.999308	− 5 53 15.15	− 0 45 3.11
Armagh	+ 54 21 12.7	− 10 54.9	9.999043	− 4 41 36.54	+ 0 26 35.5
Athens	+ 37 58 20.0	− 11 9.4	9.999453	− 6 43 7.74	− 1 34 55.7
Beloit	+ 42 30 9.0	− 11 27.8	9.999340	+ 0 47 55.26	+ 5 56 7.30
Berlin	+ 52 30 16.7	− 11 7.7	9.999088	− 6 1 46.95	− 0 53 34.91
Berne	+ 46 57 8.7	− 11 29.2	9.999227	− 5 37 58.04	− 0 29 46.0
Besançon	+ 47 14 59.0	− 11 28.7	9.999219	− 5 32 9.24	− 0 23 57.20
Bethlehem	+ 40 36 23.9	− 11 22.2	9.999388	− 0 6 40.19	+ 5 1 31.85
Birr Castle	+ 53 5 47.0	− 11 3.9	9.999074	− 4 36 31.14	+ 0 31 40.9
Bologna	+ 44 29 47.0	− 11 30.5	9.999289	− 5 53 36.64	− 0 45 24.6
Bonn	+ 50 43 45.0	− 11 17.3	9.999132	− 5 36 35.33	− 0 28 23.29
Bordeaux	+ 44 50 16.7	− 11 30.7	9.999281	− 5 6 6.60	+ 0 2 5.44
Bothkamp	+ 54 12 9.6	− 10 56.0	9.999047	− 5 48 42.84	− 0 40 30.8
Breslau	+ 51 6 56.5	− 11 15.4	9.999122	− 6 16 20.75	− 1 8 8.71
Brussels	+ 50 51 10.5	− 11 16.8	9.999129	− 5 25 40.64	− 0 17 28.6
Cambridge (*England*)	+ 52 12 51.6	− 11 9.4	9.999095	− 5 8 34.79	− 0 0 22.75
Cambridge (*Mass.*)	+ 42 22 47.6	− 11 27.6	9.999343	− 0 23 41.05	+ 4 44 30.99
Cape of Good Hope	− 33 56 3.4	+ 10 39.0	9.999550	− 6 22 6.78	− 1 13 54.74
Chapultepec	+ 19 25 17.5	− 7 12.0	9.999841	+ 1 28 26.20	+ 6 36 38.24
Charkow	+ 50 0 10.2	− 11 20.5	9.999150	− 7 33 6.74	− 2 24 54.7
Charlottesville	+ 38 2 1.2	− 11 9.8	9.999448	+ 0 5 53.18	+ 5 14 5.22
Chicago	+ 41 50 1.0	− 11 26.2	9.999357	+ 0 42 14.69	+ 5 50 26.73
Christiania	+ 59 54 43.7	− 10 0.2	9.998914	− 5 51 5.89	− 0 42 53.85
Cincinnati (*New Obs.*)	+ 39 8 19.5	− 11 15.8	9.999424	+ 0 29 29.25	+ 5 37 41.29
Cincinnati (*Old Obs.*)	+ 39 6 26.5	− 11 15.6	9.999425	+ 0 29 47.01	+ 5 37 59.05
Clinton	+ 43 3 17.0	− 11 28.9	9.999326	− 0 6 34.65	+ 5 1 37.39
Coimbra	+ 40 12 25.8	− 11 20.6	9.999398	− 4 34 37.54	+ 0 33 34.5
Copenhagen	+ 55 41 13.6	− 10 43.9	9.999011	− 5 58 30.96	− 0 50 18.92
Cordoba	− 31 25 15.5	+ 10 13.5	9.999608	− 0 51 23.84	+ 4 16 48.2
Cracow	+ 50 3 50.0	− 11 20.3	9.999149	− 6 28 2.41	− 1 19 50.37
Dantzig	+ 54 21 18.0	− 10 54.9	9.999043	− 6 22 51.34	− 1 14 39.3
Denver	+ 39 40 36.4	− 11 16.0	9.999423	+ 1 51 35.59	+ 6 59 47.63
Dorpat	+ 58 22 47.4	− 10 17.6	9.998948	− 6 55 5.54	− 1 46 53.5
Dresden	+ 51 2 16.8	− 11 15.8	9.999124	− 6 3 6.88	− 0 54 54.84
Dublin	+ 53 23 13	− 11 1.9	9.999066	− 4 42 50.04	+ 0 25 22
Düsseldorf	+ 51 12 25	− 11 15.0	9.999120	− 5 35 17.04	− 0 27 5
Dun Echt	+ 57 9 36	− 10 30.2	9.998977	− 4 58 32.04	+ 0 9 40.0

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude	
				From Washington.	From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Durham	+ 54 46 6.2	− 10 51.6	9.999033	− 5 1 52.24	+ 0 6 19.8
Edinburgh	+ 55 57 23.2	− 10 41.5	9.999005	− 4 55 28.99	+ 0 12 43.05
Florence	+ 43 46 4.1	− 11 29.9	9.999308	− 5 53 13.54	− 0 45 1.5
Geneva	+ 46 11 58.8	− 11 30.1	9.999246	− 5 32 48.81	− 0 24 36.77
Georgetown	+ 38 54 26.2	− 11 14.6	9.999430	+ 0 0 6.20	+ 5 8 18.24
Glasgow (*Missouri*).	+ 39 13 45.6	− 11 16.2	9.999422	+ 1 3 5.93	+ 6 11 17.97
Glasgow (*Scotland*).	+ 55 52 42.8	− 10 42.2	9.999006	− 4 51 1.44	+ 0 17 10.6
Göttingen	+ 51 31 47.9	− 11 13.3	9.999112	− 5 47 58.28	− 0 39 46.24
Gotha	+ 50 56 37.5	− 11 16.3	9.999127	− 5 51 2.57	− 0 42 50.53
Greenwich	+ 51 28 38.4	− 11 13.6	9.999113	− 5 8 12.04	0 0 0
Hamburg	+ 53 33 7.0	− 11 0.8	9.999062	− 5 48 5.74	− 0 39 53.7
Hanover	+ 43 42 15	− 11 29.8	9.999309	− 0 19 4.13	+ 4 49 7.91
Hastings-on-Hudson	+ 40 59 25	− 11 23.6	9.999378	− 0 12 42.4	+ 4 55 29.64
Haverford	+ 40 0 40.1	− 11 19.8	9.999402	− 0 6 59.34	+ 5 1 12.70
Helsingfors	+ 60 9 43.3	− 9 57.1	9.998909	− 6 48 1.20	− 1 39 49.16
Hongkong	+ 22 18 12.2	− 8 3.8	9.999792	−12 44 53.94	− 7 36 41.9
Hudson	+ 41 14 42.6	− 11 24.4	9.999371	+ 0 17 32.12	+ 5 25 44.16
Ipswich	+ 52 0 33.0	− 11 11.0	9.999100	− 5 13 7.84	− 0 4 55.80
Karlsruhe	+ 49 0 29.6	− 11 24.2	9.999175	− 5 41 48.55	− 0 33 36.51
Kasan	+ 55 47 24.2	− 10 43.0	9.999009	− 8 24 40.94	− 3 16 28.9
Kew	+ 51 28 6	− 11 13.6	9.999114	− 5 6 56.94	+ 0 1 15.1
Kiel	+ 54 20 29.7	− 10 55.0	9.999043	− 5 48 47.80	− 0 40 35.76
Kiew	+ 50 27 11.1	− 11 18.6	9.999139	− 7 10 12.68	− 2 2 0.64
Königsberg	+ 54 42 50.6	− 10 52.0	9.999034	− 6 30 10.95	− 1 21 58.91
Kremsmünster	+ 48 3 23.7	− 11 27.0	9.999199	− 6 4 44.24	− 0 56 32.2
Leiden	+ 52 9 20.0	− 11 9.8	9.999097	− 5 26 8.39	− 0 17 56.35
Leipzig	+ 51 20 6.3	− 11 14.3	9.999117	− 5 57 46.06	− 0 49 34.02
Leyton	+ 51 34 34	− 11 13.0	9.999111	− 5 8 11.17	+ 0 0 0.87
Lisbon (*Marine Obs.*)	+ 38 42 17.6	− 11 13.5	9.999435	− 4 31 47.04	+ 0 36 25.0
Lisbon (*Royal Obs.*)	+ 38 42 31.3	− 11 13.6	9.999435	− 4 31 27.36	+ 0 36 44.68
Liverpool	+ 53 24 4	− 11 1.8	9.999066	− 4 55 54.84	+ 0 12 17.2
Lübec	+ 53 51 31.2	− 10 58.6	9.999055	− 5 50 57.59	− 0 42 45.55
Lund	+ 55 41 52.1	− 10 43.8	9.999011	− 6 0 57.07	− 0 52 45.03
Lyons	+ 45 41 40.0	− 11 30.5	9.999259	− 5 27 19.90	− 0 19 7.86
Madison	+ 43 4 37.0	− 11 28.9	9.999325	+ 0 49 25.79	+ 5 57 37.83
Madras	+ 13 4 8.1	− 5 3.3	9.999926	−10 29 11.46	− 5 20 59.42
Madrid	+ 40 24 30.0	− 11 21.4	9.999393	− 4 53 26.64	+ 0 14 45.4
Manheim	+ 49 29 11.0	− 11 22.5	9.999163	− 5 42 2.56	− 0 33 50.52
Marburg	+ 50 48 46.9	− 11 16.9	9.999130	− 5 43 17.04	− 0 35 5.0
Markree	+ 54 10 31.8	− 10 56.2	9.999047	− 4 34 23.64	+ 0 33 48.4
Marseilles	+ 43 18 19.1	− 11 29.3	9.999320	− 5 29 46.68	− 0 21 34.64
Melbourne	− 37 49 53.3	+ 11 8.6	9.999456	−14 48 6.18	− 9 39 54.14
Mexico	+ 19 26 1.3	− 7 12.2	9.999840	+ 1 28 14.63	+ 6 36 26.67
Milan	+ 45 27 59.2	− 11 30.6	9.999265	− 5 44 58.01	− 0 36 45.97
Modena	+ 44 38 52.8	− 11 30.6	9.999285	− 5 51 54.84	− 0 43 42.8
Montreal	+ 45 30 17.0	− 11 30.6	9.999264	− 0 13 53.50	+ 4 54 18.54
Montsouris	+ 48 49 18.0	− 11 24.8	9.999180	− 5 17 32.72	− 0 9 20.68

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude From Washington.	 From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Moscow . . .	+ 55 45 19.8	− 10 43.3	9.999009	− 7 38 28.94	− 2 30 16.9
Mount Hamilton .	+ 37 20 23.5	− 11 5.5	9.999468	+ 2 58 22.05	+ 8 6 34.09
Munich . . .	+ 48 8 45.5	− 11 26.7	9.999197	− 5 54 38.17	− 0 46 26.13
Naples . . .	+ 40 51 45.4	− 11 23.1	9.999381	− 6 5 12.94	− 0 57 0.9
Nashville . .	+ 36 8 58.2	− 10 57.3	9.999497	+ 0 38 55.93	+ 5 47 7.97
Natal . . .	− 29 50 47.0	+ 9 55.2	9.999642	− 7 10 13.20	− 2 2 1.16
Neuchatel . .	+ 46 59 51.0	− 11 29.1	9.999226	− 5 36 2.24	− 0 27 50.2
New Haven . .	+ 41 18 36.5	− 11 24.6	9.999370	− 0 16 29.90	+ 4 51 42.14
New York (*Columb. Coll.*)	+ 40 45 23.1	− 11 22.7	9.999384	− 0 12 18.40	+ 4 55 53.64
New York (RUTHERFURD)	+ 40 43 48.5	− 11 22.6	9.999384	− 0 12 15.00	+ 4 55 57.04
Nice . . .	+ 43 43 16.7	− 11 29.8	9.999309	− 5 37 24.24	− 0 29 12.20
Nicolaeff . . .	+ 46 58 20.6	− 11 29.2	9.999226	− 7 16 6.14	− 2 7 54.1
Northfield . .	+ 44 27 41.6	− 11 30.5	9.999290	+ 1 4 23.77	+ 6 12 35.81
Odessa . . .	+ 46 28 36	− 11 29.8	9.999239	− 7 11 14.34	− 2 3 2.3
Ogden . . .	+ 41 13 8.6	− 11 34.3	9.999372	+ 2 19 47.52	+ 7 27 59.56
O-Gyalla . . .	+ 47 52 43.4	− 11 27.4	9.999204	− 6 20 57.63	− 1 12 45.59
Olmütz . . .	+ 49 35 43	− 11 22.1	9.999160	− 6 17 14.64	− 1 9 2.6
Oxford (*Mississippi*)	+ 34 22 12.6	− 10 42.9	9.999540	+ 0 49 55.05	+ 5 58 7.09
Oxford (*Radcliffe*) .	+ 51 45 36.0	− 11 12.0	9.999106	− 5 3 9.44	+ 0 5 2.6
Oxford (*University*)	+ 51 45 34.2	− 11 12.0	9.999106	− 5 3 11.64	+ 0 5 0.40
Padua . . .	+ 45 24 2.5	− 11 30.6	9.999266	− 5 55 41.17	− 0 47 29.13
Palermo . . .	+ 38 6 44	− 11 10.2	9.999449	− 6 1 37.04	− 0 53 25.0
Paramatta . .	− 33 48 49.8	+ 11 37.8	9.999553	− 15 12 18.24	− 10 4 6.2
Paris . . .	+ 48 50 11.8	− 11 24.8	9.999179	− 5 17 32.99	− 0 9 20.95
Philadelphia . .	+ 39 57 7.5	− 11 19.5	9.999404	− 0 7 33.58	+ 5 0 38.46
Plonsk . . .	+ 52 37 40.0	− 11 6.9	9.999085	− 6 29 44.05	− 1 21 32.01
Pola . . .	+ 44 51 49.0	− 11 30.6	9.999280	− 6 3 35.22	− 0 55 23.18
Portsmouth . .	+ 50 48 3.0	− 11 17.0	9.999130	− 5 3 48.14	+ 0 4 23.90
Potsdam . . .	+ 52 22 56	− 11 8.4	9.999091	− 6 0 29.04	− 0 52 17
Poughkeepsie . .	+ 41 41 18	− 11 25.8	9.999360	− 0 12 38.44	+ 4 55 33.6
Prague . . .	+ 50 5 18.8	− 11 20.2	9.999148	− 6 5 53.44	− 0 57 41.4
Princeton . .	+ 40 20 57.8	− 11 21.2	9.999394	− 0 9 34.54	+ 4 58 37.50
Pulkowa . . .	+ 59 46 18.7	− 10 1.8	9.998917	− 7 9 30.71	− 2 1 18.67
Quebec . . .	+ 46 48 17.3	− 11 29.4	9.999231	− 0 23 22.74	+ 4 44 49.3
Rio de Janeiro .	− 22 54 23.8	+ 8 14.0	9.999782	− 2 15 30.63	+ 2 52 41.41
Rochester . .	+ 43 9 16.8	− 11 29.0	9.999324	+ 0 2 9.74	+ 5 10 21.78
Rome (*Coll. Rom.*) .	+ 41 53 53.6	− 11 26.3	9.999355	− 5 58 6.74	− 0 49 54.70
San Fernando . .	+ 36 27 41.5	− 10 59.5	9.999490	− 4 43 22.44	+ 0 24 49.6
Santiago de Chile .	− 33 26 42.0	+ 10 34.4	9.999651	− 0 25 25.74	+ 4 42 46.30
Schwerin . .	+ 53 37 38.2	− 11 0.2	9.999061	− 5 53 52.74	− 0 45 40.7
Senftenberg . .	+ 50 5 10.1	− 11 20.2	9.999148	− 6 14 2.64	− 1 5 50.6
South Hadley . .	+ 42 15 18.2	− 11 27.3	9.999346	− 0 17 51.75	+ 4 50 20.29
Speier . . .	+ 49 18 55.4	− 11 23.2	9.999167	− 5 41 57.64	− 0 33 45.6
St. Louis . . .	+ 38 38 3.6	− 11 13.2	9.999437	+ 0 52 37.07	+ 6 0 49.11
St. Petersburg .	+ 59 56 29.7	− 9 59.8	9.998913	− 7 9 25.54	− 2 1 13.5
Stockholm . .	+ 59 20 33.0	− 10 6.9	9.998927	− 6 20 26.04	− 1 12 14.00
Stonyhurst . .	+ 53 50 40	− 10 58.7	9.999055	− 4 58 19.36	+ 0 9 52.68

POSITIONS OF OBSERVATORIES.

(*North Latitudes and West Longitudes are Considered Positive.*)

Place.	Latitude.	Reduction to Geocentric Latitude.	Log ρ.	Longitude From Washington.	Longitude From Greenwich.
	° ′ ″	′ ″		h m s	h m s
Strassburg (*New Obs.*)	+ 48 34 59.7	− 11 25.5	9.999186	− 5 39 16.69	− 0 31 4.65
Strassburg (*Old Obs.*)	+ 48 34 53.8	− 11 25.5	9.999186	− 5 39 14.53	− 0 31 2.49
Sydney . . .	− 33 51 41.1	+ 10 38.3	9.999552	−15 13 1.58	−10 4 49.54
Taschkent . . .	+ 41 19 32.2	− 11 24.7	9.999369	− 9 45 22.84	− 4 37 10.80
Toronto . . .	+ 43 39 35.9	− 11 29.8	9.999310	+ 0 9 22.61	+ 5 17 34.65
Toulouse . . .	+ 43 36 47	− 11 29.7	9.999312	− 5 14 3.14	− 0 5 51.1
Turin	+ 45 4 6.0	− 11 30.7	9.999275	− 5 39 0.44	− 0 30 48.4
Twickenham . .	+ 51 27 4.2	− 11 13.7	9.999114	− 5 6 58.94	+ 0 1 13.1
Upsala . . .	+ 59 51 31.5	− 10 0.8	9.998915	− 6 18 42.23	− 1 10 30.19
Utrecht . . .	+ 52 5 10.5	− 11 10.2	9.999098	− 5 28 43.74	− 0 20 31.7
Venice . . .	+ 45 25 49.5	− 11 30.6	9.999266	− 5 57 37.44	− 0 49 25.4
Vienna (*Josephstadt*)	+ 48 12 53.8	− 11 26.6	9.999195	− 6 13 37.34	− 1 5 25.3
Vienna (*New Obs.*) .	+ 48 13 55.4	− 11 26.5	9.999195	− 6 13 33.26	− 1 5 21.22
Vienna (*Old Obs.*) .	+ 48 12 35.5	− 11 26.6	9.999195	− 6 13 43.78	− 1 5 31.74
Warsaw . . .	+ 52 13 5.7	− 11 9.4	9.999095	− 6 32 19.44	− 1 24 7.4
Washington . .	+ 38 53 38.8	− 11 14.5	9.999430	0 0 0	+ 5 8 12.04
West Point . .	+ 41 23 31	− 11 24.9	9.999368	− 0 12 22.71	+ 4 55 49.33
Wilhelmshaven .	+ 53 31 52.0	− 11 0.9	9.999063	− 5 40 47.25	− 0 32 35.21
Williamstown (*Mass.*)	+ 42 42 49	− 11 28.3	9.999334	− 0 15 18.6	+ 4 52 53.44
Williamstown (*Victoria*)	− 37 52 7.2	+ 11 8.8	9.999455	−14 47 50.84	− 9 39 38.8
Wilna . . .	+ 54 41 0	− 10 52.3	9.999035	− 6 49 23.94	− 1 41 11.9
Windsor . . .	− 33 36 28.9	+ 10 35.9	9.999558	−15 11 32.81	−10 3 20.77
Zürich . . .	+ 47 22 40.0	− 11 28.5	9.999216	− 5 42 24.64	− 0 34 12.6

ON THE ARRANGEMENT AND USE OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC.

PART I—THE EPHEMERIS FOR THE MERIDIAN OF GREENWICH.

THE greater portion of this Ephemeris, embracing the positions of the sun and moon; the distances of the moon from the centres of the sun and the four most conspicuous planets, and from certain fixed stars; the ephemerides of the planets Mercury, Venus, Mars, Jupiter, and Saturn, is designed for the special use of navigators. The remainder contains the ephemerides of Uranus and Neptune, the heliocentric co-ordinates of the seven major planets, the rectangular equatorial co-ordinates of the sun, the moon's longitude and latitude, data for the libration of the moon, the obliquity of the ecliptic, the equation of the equinoxes, etc.

TIME.

Astronomers make use of several different kinds of time; mean solar time; true, or apparent solar time; and sidereal time.

Solar Time.—Solar time is that used for all the purposes of ordinary life, and is measured by the daily motion of the sun. A *Solar Day* is the interval of time between two successive transits of the sun over the same meridian; and the hour-angle of the sun is called *Solar Time.* This is the most natural and direct measure of time. But the intervals between the successive returns of the sun to the same meridian are not exactly equal, owing to the varying motion of the earth around the sun, and to the obliquity of the ecliptic. The intervals between the sun's transits over the meridian being unequal it is impossible to regulate a clock or chronometer so that it shall accurately follow the sun.

To avoid the irregularity which would arise from using the true sun as the measure of time, a fictitious sun, called the *Mean Sun,* is supposed to move in the equator with a uniform velocity. This mean sun is supposed to keep, on the average, as near the real sun as is consistent with perfect uniformity of motion; it is sometimes in advance of it, and sometimes behind it, the greatest deviation being about 16 minutes of time.

Mean Solar Time, which is perfectly equable in its increase, is measured by the motion of this mean sun. The clocks in ordinary use and the chronometers used by navigators are regulated to mean solar time.

True, or *Apparent Solar Time* is measured by the motion of the real sun.

The difference between apparent and mean time is called the *Equation of Time.* By means of it, we change apparent to mean time, or the reverse. Thus, if the apparent time be given, the mean time corresponding to it will be obtained by adding or subtracting the equation of time, according to the precept at the head of the column in which it is found, on page I of the Calendar for each month. If the mean time be given, the apparent time is obtained by applying the equation of time as directed by the precept on page II of the Calendar.

Sidereal Time.—Sidereal time is measured by the daily motion of the stars; or, as it is used by astronomers, by the daily motion of that point in the equator from which the true right ascension of the stars is counted. This point is the vernal equinox, and its hour-angle is called *Sidereal Time.* Astronomical clocks, regulated to sidereal time, are called sidereal clocks.

A *Sidereal Day* is the interval of time between the transit of the vernal equinox over the meridian, and its next succeeding return to the same meridian. It is about 3^m 56^s shorter than the mean solar day; 365¼ solar days, or a year, being divided into 366¼ sidereal days. It is divided into 24 hours. The sidereal hours are counted from 0 to 24, commencing with the instant of the passage of the true vernal equinox over the upper meridian, and ending with its return to the same meridian. About March 21st of each year the sidereal clock agrees with the mean time, or ordinary clock, and the former gains on the latter about 3^m 56^s per day, so that at the end of a year it will have gained an entire day, and will again agree with the mean time clock.

Day.—The *Civil Day*, according to the customs of society, commences at midnight, and comprises twenty-four hours, from one midnight to the next following. The hours are counted from 0 to 12 from midnight to noon, after which they are again reckoned from 0 to 12 from noon to midnight. Thus the day is divided into two periods of 12 hours each, of which the first is marked A. M., and the last is marked P. M.

The *Astronomical Day* commences at noon on the civil day of the same date. It also comprises twenty-four hours, but they are reckoned from 0 to 24, and from the noon of one day to that of the next following. The astronomical as well as the civil time may be either apparent or mean, according as it is reckoned from apparent noon or from mean noon.

The civil day begins twelve hours before the astronomical day; therefore the first period of the civil day answers to the last part of the preceding astronomical day, and the last period of the civil day corresponds to the first part of the same astronomical day. Thus, January 9th, 2 o'clock, A. M., civil time, is January 8th, 14^h, astronomical time; and January 9th, 2 o'clock, P. M., civil time, is also January 9th, 2^h, astronomical time. The rule, then, for the transformation of civil time into astronomical time is this:—*If the civil time is marked A. M., take one from the day and add twelve to the hours, and the result is the astronomical time wanted; if the civil time is marked P. M., take away the designation P. M., and the astronomical time is had without further change.*

To change astronomical to civil time, we simply write P. M. after it, if it is less than 12 *hours. If greater than* 12 *hours, we subtract* 12 *hours from it, add* 1 *to the days, and write A. M.* For example, January 3d, 23 hours, astronomical time, is January 4th, 11 o'clock, A. M., civil time.

If the longitude from Greenwich be expressed in time, and, when *west*, *added* to the local time, or, when *east*, *subtracted* from the local time, the result is the corresponding Greenwich time. If the local mean time is used, the result is the Greenwich mean time, which ordinarily is that required for the use of this Ephemeris. The rule is the same, whether we use mean or sidereal time.

THE CALENDAR.

The Calendar is divided into twelve months, and to each month are assigned eighteen pages, the contents of which are as follow:—

Page I contains, for Greenwich apparent noon of each day, *The Sun's Apparent Right Ascension* and *Declination*, and the *Equation of Time.* Adjoining columns contain the differences of these quantities for one hour. By multiplying this difference by the hours and parts of an hour from Greenwich apparent noon, and adding the amount to, or subtracting it from, the quantity at noon, according as that quantity is increasing or decreasing, we obtain the value of any quantity for any given Greenwich apparent time. The hourly differences are given for the instant of apparent noon at Greenwich, and, when greater accuracy is required, should be first interpolated for half the hours and parts of an hour of the Greenwich apparent time.

This page is chiefly used when the sun is observed on the meridian, and the local apparent time is $0^h\,0^m\,0^s$. The longitude from Greenwich expressed in time, if west, is at that instant the Greenwich apparent time, or time after Greenwich apparent noon; if east, it is time before

Greenwich apparent noon. The longitude of any place is therefore employed in reducing the quantities on this page to apparent noon at the place.

The right ascension of the sun thus reduced is the sidereal time of local apparent noon. The difference between it and the clock time of the meridian passage of the sun is the error of the clock on sidereal time.

The declination of the sun reduced to the meridian, or apparent noon, of the place, is required in finding the latitude from a meridian altitude of the sun.

As an example of the use of page I:—

Let the sun's declination be required at apparent noon, 1894, May 31, at a place whose longitude is 179° 40′, or 11^h 58^m 40^s east from Greenwich:

		h	m	s
Local apparent time . . .	May 31,	0	0	0
Longitude from Greenwich (subtractive) . .		11	58	40
Greenwich apparent time . . .	May 30,	12	1	20

Reducing the minutes and seconds to decimals of an hour, we find that this moment is 12^h.022 after Greenwich apparent noon on May 30, or 11^h.978 before Greenwich apparent noon on May 31.

On page 74 of the Ephemeris we find that the change of declination in one hour is

May 30, at Greenwich apparent noon . . .	22″.09
May 31, at Greenwich apparent noon . . .	21.14
Difference for one day	0.95

If we want to be very exact, we find the amount of this hourly difference for the time which is half way between Greenwich noon and the time of observation; that is, for 6 hours after Greenwich noon of the 30th, this being half of 12 hours. Six hours is 0.25 of a day; so the calculation is as follows:—

Difference for one hour, May 30	22″.09
Change for 0.25 of a day or 0″.95 × 0.25 . . .	0.24
Difference at 6 hours after noon	21.85

$$21''.85 \times 12.022 = 262''.7 = 4'\ 22''.7$$

Declination at Greenwich noon, May 30 . . .	N. 21° 48′ 56″.7
Change in 12.022 hours (additive) . . .	4 22.7
Sun's declination at time of observation . . .	N. 21 53 19.4

When the time of observation is only a few hours before Greenwich noon, it may be better to count the longitude backward from this nearest noon. Thus, in the example just given, the time is 11^h.978 before Greenwich noon of May 31; half this interval is about 0.25 of a day, and the hourly motion for the middle of the interval is 21″.38. Then, we find:—

Declination at Greenwich noon, May 31 . .	N. 21° 57′ 35″.5
Product of 21″.38 × 11.978 = 256″.1 (subtractive) .	4 16.1
Sun's declination at time of observation . . .	N. 21 53 19.4

It will always be well to make the calculation by both methods, as their agreement will show both to be right.

At sea it is ordinarily sufficient to have the declination to the nearest half minute, and the reduction may be found by Table V of Bowditch's *American Practical Navigator.*

The equation of time, as has been before explained, is the number of minutes and seconds to be added to or subtracted from the apparent time, or the time given by an observation of the sun, to obtain the mean time. The heading of the column directs the manner in which the equation is to be applied. When there is a change in the course of the month from addition to subtraction or the reverse (as in the months of April and June), the two different directions are separated by a line, while a corresponding line below points out the dates between which the change takes place. The equation of time, as given on page I, is the mean time of apparent noon, or the hour-angle of the mean sun at that instant.

The Sun's Semidiameter and the *Sidereal Time of Semidiameter Passing Meridian* are also given on page I. The sun's semidiameter is used in reducing the altitude of the upper or lower limb of the sun to the altitude of the center; and in reducing the angular distance of the limb from the moon or some other object, to the distance from the center of the sun. The sidereal time of semidiameter passing the meridian is employed in obtaining the passage of the sun's center over the wires of a transit-instrument, when the passage of one limb only has been observed. The quantity found in this column is to be added to the time of transit of the first, or western, limb; and to be subtracted from the time of transit of the second, or eastern, limb.

Page II contains, for Greenwich mean noon of each day, *The Sun's Apparent Right Ascension*, and *Declination*, the *Equation of Time*, and the *Sidereal Time of Mean Noon*. The hourly changes of these quantities are also given, and may be used in reducing them to any Greenwich mean time. The hourly changes may be first interpolated for half the Greenwich time, when great precision is required, in the way described in explaining the calculation of the declination.

The right ascension and declination on pages I and II are affected by aberration, and therefore denote the *apparent* position of the *true* sun. Page II is more conveniently used when the mean time is known. This is the case in most observations of the sun out of the meridian, when the times have been noted by a clock or chronometer regulated to mean time. The quantities on this page can be reduced to mean noon of any place by interpolating for the longitude, as in the example of the sun's declination on the preceding page.

The sun's declination is required for finding the latitude of the place, the local time, and the sun's azimuth and amplitude, from observations of the sun.

The equation of time is needed in finding the mean time from observations of the sun, and the latitude from observations out of the meridian. The heading of the column directs the manner in which it is to be applied to mean time to obtain the apparent time.

The equation of time, as given on page II, is the apparent time of mean noon; and is equivalent to the hour-angle of the true sun at the instant of mean noon.

The sidereal time of mean noon is also the right ascension of the mean sun at Greenwich mean noon. It may be reduced for the longitude, or to any Greenwich mean time, by using the hourly difference, $9^s.8565$; or by Table III, appended to this volume, for reducing intervals of mean solar to sidereal time. Table LI of BOWDITCH's *Navigator* may be used for the same purpose when only the nearest quarter of a second is required.

The sun's right ascension and the sidereal time of mean noon, or right ascension of the mean sun, are useful in converting mean time to sidereal time. We first find the Greenwich mean time, then the R. A. of the mean sun for this time, as last explained: this being added to the local mean time will give the sidereal time.

The sidereal time of mean noon, reduced for the longitude of the place, is also used in converting sidereal time to mean time. Subtracting the reduced value from the given sidereal time, gives the interval of sidereal time from noon. Subtracting from this the corresponding reduction of a sidereal interval to a mean time interval, in Table II, appended to this volume, or Table LII of BOWDITCH's *Navigator*, will give the mean time required. This reduction may also be found by multiplying $9^s.8296$ by the hours and parts of an hour of the given sidereal time.

As examples of the use of page II:—

1.—Let the sun's right ascension and the equation of time be required for 1894, May 15, $9^h\ 2^m\ 30^s$, A. M., mean time, at a place whose longitude is 100° 10′, or $6^h\ 40^m\ 40^s$, west of Greenwich.

		h	m	s	
Local astronomical mean time . . .	May 14,	21	2	30	
Longitude from Greenwich (additive)		6	40	40	
Greenwich mean time.	May 15,	3	43	10	$=3^h.7194$

Sun's Right Ascension.

	h m s
May 15, Greenwich noon .	3 28 57.30
H. D. $9^{s}.878 \times 3.7194$ . .	+ 0 36.74
	3 29 34.04

Equation of Time.

	m s
May 15, noon . .	3 50.48 (additive)
H. D. — $0^{s}.024 \times 3.72$	— 0.09
	3 50.39

In this case, the hourly differences interpolated to half the interval, or $1^{h}.9$ after noon, have been used.

The equation of time in this example is additive to mean time. Its reduction could also have been found by Table VI, A., of Bowditch's *Navigator*, but to seconds only.

2.—If the sidereal time is required for the same date and time, we have:—

	h m s
May 15, Sidereal Time (at Greenwich mean noon)	3 32 47.78
Hourly difference $9^{s}.8565 \times 3.7194$	+ 0 36.66
Add the local astronomical mean time	21 2 30.00
The required sidereal time is (rejecting 24^{h})	0 35 54.44

The reduction $0^{m}\ 36^{s}.66$ could have been found in Table III corresponding to the Greenwich mean time $3^{h}\ 43^{m}\ 10^{s}$. Also, by Table LI of Bowditch's *Navigator*, the reduction is $0^{m}\ 36^{s}.7$.

3.—On 1894, May 15, A. M., at a place whose longitude is 100° 10′ W., suppose the sidereal time to be $0^{h}\ 36^{m}\ 37^{s}.16$, and that the corresponding mean time is required.

The astronomical day is May 14; the longitude in time, $+ 6^{h}\ 40^{m}\ 40^{s}$, or $+ 6^{h}.678$.

	h m s
May 14, Sidereal Time (at Greenwich mean noon)	3 28 51.23
The H. D. $9^{s}.8565 \times 6.678$, or the reduction for $6^{h}\ 40^{m}\ 40^{s}$ in Table III .	+ 1 5.82
The sidereal time of local mean noon	3 29 57.05
The given sidereal time ($+ 24^{h}$, if necessary for the following subtraction) .	24 36 37.16
Subtracting the first from the second gives the sidereal interval from noon .	21 6 40.11 $= 21^{h}.1114$
$-9^{s}.8296 \times 21.1114$, or the reduction for $21^{h}\ 6^{m}\ 40^{s}.11$ in Table II . .	— 3 27.51
The required astronomical mean time is . . . May 14,	21 3 12.60

Page III contains, for Greenwich mean noon of each day, *The Sun's True Longitude* and *Latitude*, and the *Logarithm of the Radius Vector of the Earth.* The longitudes of the sun are the true longitudes, not corrected for aberration. The longitude is given in two columns, headed λ and λ'; λ representing the sun's longitude counted from the true equinox of the date; and λ', the same co-ordinate counted from the mean equinox of the beginning of the year, (January $0^{d}.0$). A column of hourly differences enables the computer to obtain the sun's longitude for any hour from noon. The hourly differences of the logarithm of the radius vector are likewise given. The latitude is referred to the ecliptic of the date.

The last column on page III contains the *Mean Time of Sidereal Noon;* that is, the number of hours, minutes and seconds after Greenwich mean noon when the first point of Aries passes the meridian of Greenwich. It may be reduced to any meridian by interpolating for the longitude, or to any Greenwich sidereal time by means of the hourly difference, $-9^{s}.8296$. The reduction, however, can be taken directly from Table II for reducing intervals of sidereal time to mean solar time; or, approximately, from Table LII of Bowditch's *Navigator*.

This column may be used in converting sidereal time to mean time instead of that on page II. As an illustration, let us take Example 3, above.

It is seen in advance that the sum of the mean time of sidereal noon and the given sidereal time is less than 24 hours. Were it more than 24 hours, the mean time of sidereal noon should be taken out for May 13, that is the preceding astronomical day.

	h m s
May 14, the mean time of Greenwich sidereal noon is . .	20 27 47.08
The H. D. $-9^{s}.8296 \times 6.678$, or the reduction for long., Table II	— 1 5.64
The mean time of local sidereal noon	20 26 41.44
Add the given sidereal time	0 36 37.16 $= 0^{h}.6103$
The sum is	21 3 18.60
$-9^{s}.8296 \times 0.6103$, or the reduction for $0^{h}\ 36^{m}\ 37^{s}.2$ in Table II .	— 0 6.00
The required astronomical mean time . . May 14,	21 3 12.60

Page IV contains *The Moon's Semidiameter* and Equatorial *Horizontal Parallax*, for each mean noon and midnight at Greenwich. Columns adjoining those of the horizontal parallax give the change of this quantity in one hour, by means of which it can be reduced to any other Greenwich mean time, in the same way as the sun's declination and the equation of time in the preceding examples. The sign plus or minus prefixed to the hourly differences, shows whether the horizontal parallax is increasing or decreasing.

The reduction of the moon's semidiameter may be readily found by multiplying the reduction of the horizontal parallax by 0.272. It may also be obtained from Table XI of BOWDITCH's *Navigator*, or by simply computing the proportional part.

If, for example, the semidiameter of the moon is to be taken out for 1894, June 11, 10^{h}, P. M., Greenwich mean time, we see that the difference of the semidiameters at noon and midnight of June 11 is $5''.8$; then,

$$12^{h} : 10^{h} = 5''.8 : 4''.8,$$

which is the correction to be subtracted from the semidiameter at noon, because the semidiameter is decreasing. The moon's semidiameter then, for June 11, 10^{h}, is $15' \, 40''.0 - 4''.8$, or $15' \, 35''.2$.

The moon's semidiameter and horizontal parallax are required for all observations of the moon. When great precision is needed, the hourly differences should be first interpolated for half the interval of Greenwich time from noon or midnight, and a correction applied to the horizontal parallax for the latitude of the place of observation.

The *Mean Time of the Moon's Upper Transit at Greenwich*, which is given on page IV to tenths of a minute, is also accompanied with a column of differences for one hour of longitude, by means of which, having the longitude converted into time, the local time of the moon's meridian passage at any other place, may be computed. The reduction may be taken by simple inspection from BOWDITCH's Table XXVIII. The last column of this page contains the *Age* of the moon, or the time elapsed since the preceding new moon, to tenths of a day.

Pages V—XII contain *The Moon's Right Ascension*, and *Declination*, for each day and hour of Greenwich mean time. They are accompanied with columns of differences for one minute, which are also given at each hour. The Greenwich mean time, which is required for taking out these quantities, may be taken from a well-regulated chronometer, or obtained by applying the longitude converted into time, to the local mean time of the observer. The right ascension or declination is taken out for the day and hour of the Greenwich mean time; the *Diff. for 1 Minute* multiplied by the minutes and parts of a minute of the Greenwich time, and the product added to, or subtracted from the quantity, according as the quantity is increasing or decreasing.

Thus, suppose the moon's right ascension and declination are required for 1894, May 1, $10^{h} \, 10^{m} \, 30^{s}$, astronomical mean time at Greenwich: —

	Right Ascension.		*Declination.*
	h m s		° ′ ″
May 1, 10^{h}	23 42 11.62	. . . . .	S. 3 26 50.4
Diff. $1^{s}.9083 \times 10.5$ . . =	+ 20.04	$15''.46 \times 10.5$ =	− 2 42.3
May 1, $10^{h} \, 10^{m} \, 30^{s}$ . . .	23 42 31.66	. . . . .	S. 3 24 8.1

The differences interpolated for $5^{m}.2 = 0^{h}.09$ are, for the right ascension $1^{s}.9083$, and for the declination $15''.46$, which have been used for greater precision.

Page XII contains also the *Phases of the Moon* and the dates of the *Moon's Perigee and Apogee*, or least and greatest distances from the earth.

Pages XIII—XVIII contain the *Lunar Distances*, or the angular distances of the centre of the moon from the centre of the sun, and from the four larger planets and certain fixed stars, as they would appear to an observer at the centre of the earth. They are given for every third hour of Greenwich mean time, beginning at noon; the dates are therefore astronomical. All the distances that can be observed on the same day, are grouped together under that date; and the columns are read from left to right, across both pages of the same opening. The letter W. or E. is affixed to the name of the sun, planet or star, to indicate that it is on the west, or east side of the moon.

An observer on the earth's surface having measured a lunar distance, corrected it for errors of his instrument and for the semidiameter of the objects, and cleared it from the effects of refraction and parallax, finds the true or geocentric distance, that is, the distance as it would have appeared from the centre of the earth at the moment of observation. With this distance and the distances in the Ephemeris of the same bodies on the same day, the Greenwich mean time of the observation can be found.

To lessen the labor of computation, there is given in the Ephemeris, between every two successive distances, the logarithm of the seconds of time in which the distance changes 1″; or, as it is usually called, the *Proportional Logarithm of the Difference.* It is given for the middle instant of the two hours between which it is placed.

For computing the Greenwich time we have the following rule:—

Find in the Almanac the two distances between which the true distance falls; take out the nearer of these, the hours of Greenwich time over it, and the P. L. of Diff. between them.

Find the difference between the true distance and the distance taken from the Almanac; and from the proportional logarithm of this difference, as found in the Navigator, subtract the P. L. of Diff. taken from the Almanac.

The result is the proportional logarithm of an interval of time to be added to the hours of Greenwich time, taken from the Almanac, when the earlier Almanac-distance is used; to be subtracted from the hours of Greenwich time, when the later Almanac-distance is used.

Another method is, to add the common logarithm of the difference of the true and the Almanac-distances to the P. L. of Diff. of the Almanac; the sum will be the common logarithm of the correction to be applied to the hours of Greenwich time. The Table of *Logarithms of small Arcs in Space or Time,* given at the end of the volume for 1871, saves the operation of reducing degrees (or hours) and minutes to seconds, and the reverse.

As the P. L. of Diff. in the Ephemeris varies, the Greenwich time found by the methods just described may not be sufficiently exact. To correct it for such variation, or second difference, take the difference between the P. L. of Diff. used and the one which follows it in the Ephemeris, (or, more strictly, half the difference of the preceding and following ones). With this difference, and the first correction of the Greenwich time already found, enter Table I, appended to this volume, and take out the corresponding seconds, which are to be added to the approximate Greenwich time when the Prop. Logs. in the Ephemeris are decreasing; and subtracted when they are increasing.

Thus the Greenwich mean time of the observation can be obtained. If the observer has noted the time of observation by a chronometer, the difference of this chronometer-time and the Greenwich mean time will be the error of the chronometer on Greenwich time as found from the lunar distance. In this way lunar distances can be used as a check upon the chronometer. By a series of carefully observed lunar distances on both sides of the moon, the chronometer-error may generally be ascertained within 20 or 30 seconds.

If the observer has found the local mean time of observation from the observed altitude of one of the bodies, or by a watch regulated to that time by recent observations and corrected for change of longitude in the interval, the difference of this local time and the Greenwich time found from the lunar distance will be his longitude. A longitude derived by this method should always be considered as uncertain by 5′ or more.

As an example of finding the Greenwich mean time from a lunar distance, suppose that in 1894, Oct. 10, the corrected distance of the moon's centre from that of Antares is 80° 50′:—

Corrected distance	80° 51′ 0″		
Distance in Ephemeris Oct. 10, III^{h} . . .	80 42 50	P. L.	0.2966
Difference	0 8 10	P. L.	1.3432
	h m s	P. L.	1.0466
Time from III^{h} (*after*)	+0 16 10		
Corr. for 2d Diff., Table I	+ 1		
Greenwich mean time Oct. 10	3 16 11		

By a table of common logarithms, or a table of logarithms of small arcs, the reduction of the Greenwich time would be found thus:—

From Ephemeris	P.L.	0.2966
Diff. of distances, 8′ 10″ = 490″	log	2.6902
Red. of Greenwich time, 970ˢ = 0ʰ 16ᵐ 10ˢ	log	2.9868

The result is the same as by the previous method.

Pages 218—249 contain the geocentric ephemerides of the seven major planets. The positions are referred to the equator and true equinox of the date, and corrected for aberration; they are, therefore, apparent positions. All the data except meridian passage are given for the moment of Greenwich mean noon. The column *Meridian Passage* gives the hour, minute and tenth of that passage of the planet over the meridian of Greenwich which occurs next after the noon of the date.

The right ascension and declination of a planet are required whenever it has been observed for time, latitude or azimuth. The mode of reducing them to any instant of Greenwich mean time is the same as in the examples for the sun, previously given. The local mean time of passage across any other meridian can be found by dividing the daily differences by 24, and multiplying the quotient by the hours and fractions of the longitude of the place. The product is subtractive from the time of Greenwich passage when the place is east of Greenwich, and additive when west. The corrections can never exceed one-half the change for one day.

Pages 250—263 contain the heliocentric positions of the seven major planets, and the logarithms of their distances from the earth. The heliocentric longitude is reckoned, not from the true equinox, as in the preceding ephemerides, but from the mean equinox of the date. It is, therefore, necessary to apply nutation, if the longitude from the true equinox is required. The daily motion is given for the moment of Greenwich mean noon. The column *Reduction to Orbit* gives the correction to be applied to the heliocentric longitudes in order to obtain the longitude counted along the orbit of the planet. This longitude is equal to the distance of the node from the mean equinox, plus the distance of the planet from the node. The heliocentric latitude is counted from the moving plane of the ecliptic. The *Logarithm of Radius Vector* is the logarithm of the distance of the centre of the planet from that of the sun, at each Greenwich mean noon given in the first column. The two last columns give, in the same way, the logarithm of the true distance of the centre of the planet from that of the earth. The one column gives the quantity for the Greenwich noon indicated on the left hand side of the page, and the other for the noon which is midway between that date and the date next below it. In the case of Mercury, this intermediate date is mean noon of the day immediately following; in the case of Venus, Mars, Jupiter, and Saturn, it is mean noon of the second day following; and in the case of Uranus and Neptune, mean noon of the fourth day following.

Pages 264—271 contain the rectangular co-ordinates of the centre of the sun, referred to the centre of the earth as the origin, and to the true equator and equinox of each date as the circle and point of reference. Each co-ordinate is given first for Greenwich mean noon, and in the column following for mean midnight of the same day. The columns *Reduc. to Mean Eq'x of Jan.* 0 give the corrections to be applied to the co-ordinates for noon in order to obtain the corresponding co-ordinates referred to the mean equator and the mean equinox of January 0.

Pages 272—275 give the longitude and latitude of the moon for every Greenwich mean noon and midnight. Both quantities are referred to the true ecliptic and equinox of the date.

Pages 276 and 277 contain the position of the moon's equator and the mean longitude of the moon, and a table for computing the libration of the moon. The epochs of greatest libration of the moon, together with the formulæ for finding the libration in longitude and latitude are given on page 419.

Page 278 contains, for each tenth Greenwich mean noon, the values of the principal elements arising from the motion of the equinox, and also the aberration and parallax of the sun. The column *Apparent Obliquity of the Ecliptic* (Hansen) gives the true inclination of the earth's equator to the ecliptic, without correction for the terms depending on the moon's longitude. The *Equation of Equinoxes* is really the astronomical nutation; that given *In Longitude* is the correction to be applied to the longitude of the body referred to the mean equinox, in order to obtain that longitude as referred to the true equinox. When the correction is positive, the true longitudes are greater than those referred to the mean equinox; while the contrary is true when the correction has the negative sign. The equation *In R. A.* is equal to that in longitude, multiplied by the cosine of the obliquity of the ecliptic.

The next column gives the *Precession of Equinoxes in Longitude*, from January 0 to each of the dates following. *The Sun's Aberration* is the quantity which is to be applied to the true longitude of the sun in order to obtain its apparent longitude. The correction being negative shows that the apparent longitude as affected by aberration is always less than the true longitude. The *Sun's Equatorial Horizontal Parallax*, given in the next column, is the angle subtended by the radius of the earth's equator, as seen from the centre of the sun.

PART II—THE EPHEMERIS FOR THE MERIDIAN OF WASHINGTON.

Page 280 contains the formulæ for reducing the positions of the fixed stars, using the notation of BESSEL, and the constants of PETERS and STRUVE. The formulæ by which the star-numbers are computed are also given.

Pages 281—284 contain the logarithms of the *Besselian Star-Numbers*, A, B, C, D, for each Washington mean midnight. These numbers serve to reduce the mean place of a star at the beginning of the Besselian fictitious year to its apparent place at the dates for which the numbers are given. If used in accordance with the English and French notation, the pair of quantities A and B must be interchanged with the pair C and D; that is, A must be interchanged with C, and B with D. In the first column along with the solar day is given, for certain dates, the sidereal hour and tenth of midnight. The sidereal time for which any set of quantities is given can be found by interpolation from these numbers.

The following is an example of the reduction of a star to apparent place by the Besselian star-numbers: —

Computation of the apparent place of α *Hydræ for* 1894, *March* 10, *for the upper transit at Washington.*

(Star-Catalogue)	log a	0.4699	log b	7.8705	log c	8.7164 *n*	log d	8.6310
(Page 281)	log A	9.1145	log B	0.9776 *n*	log C	1.2672 *n*	log D	0.5249
(Star-Catalogue)	log a'	1.1902 *n*	log b'	9.8026 *n*	log c'	9.7169	log d'	9.0422
	log Aa	9.5844	log Bb	8.8481 *n*	log Cc	9.9836	log Dd	9.1559
	log Aa'	0.3047 *n*	log Bb'	0.7802	log Cc'	0.9841 *n*	log Dd'	9.5671

		h m s		° ′ ″
Mean Place, 1894.0,	$\alpha_0 =$	9 22 22.721	$\delta_0 =$	− 8 11 57.64
	$Aa =$	+ 0.384	$Aa' =$	− 2.01
	$Bb =$	− 0.070	$Bb' =$	+ 6.03
	$Cc =$	+ 0.963	$Cc' =$	− 9.64
	$Dd =$	+ 0.143	$Dd' =$	+ 0.37
	$E =$	− 0.001	$\tau\mu' =$	0.00
	$\tau\mu =$	0.000		
Apparent Place, 1894, *Mar.* 10,	$\alpha =$	9 22 24.140	$\delta =$	− 8 12 2.89

Pages 285—292 contain the *Independent Star-Numbers*, which can be used for the same purpose. The column τ gives the fraction of the year from the beginning of the fictitious year to each date. These quantities are connected with those of BESSEL by the relations given on page 280, where are also found the formulæ and precepts for the application of both systems of numbers. In order to use the Besselian numbers, it is necessary to have the values of the star-constants, a, b, c, d, a', b', c', d'. The independent star-numbers are given in order that the apparent place of the star may be determined when it is not convenient to compute these numbers.

The following is an example of the reduction of a star to apparent place by the independent star-numbers:—

Computation of the apparent place of α Hydræ for 1894, *March* 10, *for the upper transit at Washington.*

	$\alpha_0 = 140^\circ\ 35'.7$			$\delta_0 =$	$-\ 8^\circ\ 12'.0$
	$G = 285\ \ 22.0$			$G + \alpha_0 =$	$65\ \ 57.7$
	$H = 280\ \ 17.2$			$H + \alpha_0 =$	$60\ \ 52.9$
					$\overset{h}{\ }\ \overset{m}{\ }\ \overset{s}{\ }$
$\log \frac{1}{15}$	$= 8.8239$	$\log \frac{1}{15}$	$= 8.8239$	$\alpha_0 =$	$9\ 22\ 22.721$
$\log g$	$= 0.9934$	$\log h$	$= 1.2742$	$f =$	$+\ 0.399$
$\sin (G + \alpha_0)$	$= 9.9606$	$\sin (H + \alpha_0)$	$= 9.9413$	$(g) =$	$-\ 0.086$
$\tan \delta_0$	$= 9.1586\,n$	$\sec \delta_0$	$= 0.0045$	$(h) =$	$+\ 1.106$
$\log (g)$	$= 8.9365\,n$	$\log (h)$	$= 0.0439$	$\tau \mu =$	0.000
			Apparent R. A.,	$\alpha =$	$9\ 22\ 24.140$
$\log g$	$= 0.9934$	$\log h$	$= 1.2742$	$\delta_0 = -$	$8^\circ\ 11'\ 57''.64$
$\cos (G + \alpha_0)$	$= 9.6100$	$\cos (H + \alpha_0)$	$= 9.6872$	$(g') =$	$+\ 4.01$
$\log (g')$	0.6034	$\sin \delta_0$	$= 9.1542\,n$	$(h') =$	$-\ 1.31$
		$\log (h')$	$0.1156\,n$	$(i) =$	$-\ 7.94$
				$\tau \mu' =$	0.00
			Apparent Dec.,	$\delta = -$	$8\ 12\ \ 2.88$
$\log i$	$= 0.9046\,n$				
$\cos \delta_0$	$= 9.9955$				
$\log (i)$	$= 0.9001\,n$				

Pages 293—301 contain the mean places of three hundred and eighty-three stars, for the beginning of the fictitious year 1894, or the moment when the sun's mean longitude is 280°.

The annual variations are to be considered as the differential coefficients of each co-ordinate with respect to the time at the beginning of the year.

In order that the list of mean places of stars may serve the purpose of a working-catalogue for the convenient use of astronomers, the position of each of the northern circumpolar stars is given in duplicate, one position being for the upper and the other for the lower culmination. The positions for the lower culmination are marked S. P. In this case, the right ascensions are the sidereal times at which the star crosses the lower meridian; and, in order to have the expressions for the co-ordinates congruous in all cases, the declinations are counted from the equator through the north pole, and therefore exceed 90°. The time of observation and the setting of the circle, in order to find a star on the meridian, are then obtained uniformly for all the stars.

Beginning with the volume of 1882, the number of stars has been greatly increased, in order to make the list more useful to field-astronomers. In order to show at a glance these additional stars, they are indicated in the list by an asterisk.

Pages 302—313 contain the apparent positions of the four north polar stars, α, δ and λ Ursæ Minoris, and 51 Cephei, for every upper transit at Washington. They include the terms depending on the moon's longitude. The mean solar time of transit is given in the column *Mean Solar Date*, in order that each transit above and below the pole may be readily identified. Suppose, for example, that the transit of Polaris below the pole on January 26th is to be found. and we wish to know whether it precedes or follows the upper transit of the same date. On page 302, we find that the upper transit occurs January 26.2; the lower transit, therefore, occurs January 26.7. But, the lower transit following that of July 1st (page 308), does not take place until July 2.3. Hence, the lower transit of July 1st precedes the upper one of the same date. A transit occurring very nearly at noon may also be identified without a computation to ascertain the actual mean date, by simply noting the tenth of a day in the column of *Mean Solar Date.*

Pages 314—364 contain, for every tenth upper transit at Washington, the apparent places of those stars of the preceding list which are not marked with an asterisk. The mean solar date in each left hand column gives the day and tenth of the transit; so that each intermediate transit may be readily identified. Along with each co-ordinate is given, in small type, the change for ten days. This quantity is to be regarded as the differential coefficient corresponding to the dates for which the star-places are given.

Pages 365—376 contain the apparent right ascensions of all stars marked with an asterisk in the list of mean places. The apparent right ascension of each star is given only for that part of the year when it may readily be observed on the meridian. In the case of circumpolar stars, the right ascensions for lower, as well as upper, transit are given.

Pages 377—384 contain the apparent right ascension, declination, and semidiameter of the sun, and the sidereal time, all for Washington mean noon. Adjoining columns give the seconds of right ascension and of declination for apparent noon, that is, for the moment of transit of the sun's centre over the meridian of Washington. The hours and minutes of right ascension, and the degrees and minutes of declination are the same for both mean and apparent noon. In case they would have differed, the minute which would have been numerically larger is diminished by one, and the seconds increased by sixty, so that there is always a correspondence between the two numbers. The hourly motions in right ascension and declination are given for the moment of mean noon, but may be regarded as having the same values for apparent noon.

The *Equation of Time for Apparent Noon* is the correction to be applied to apparent time in order to obtain mean time. It is, therefore, mean time minus apparent time. Each number as given is the mean time of transit of the sun's centre over the meridian of Washington, counted from the nearest noon. The use of all the quantities is substantially the same as in the *Ephemeris for the Meridian of Greenwich.*

Pages 385—392 contain the right ascension, declination, semidiameter, and parallax of the moon, at the moment of transit over the meridian of Washington. The mean time given in the second column is that of transit of the moon's centre over this meridian. The differences for one hour of longitude are the amounts by which the local mean times of transit over a meridian one hour west of Washington exceed those given in the column *Mean Time of Transit,* supposing the rate of change to be uniform and equal to what it is at the moment of transit over the meridian of Washington. The next four columns need no especial explanation, except that the differences for one hour of longitude are computed as if the motion of the moon in right ascension were uniform. By means of them, the position of the moon can be computed with astronomical accuracy at the moment of transit over any meridian not exceeding one hour in longitude from that of Washington, by taking account of second differences. With greater longitudes of the place, the accuracy of the result obtained in this way will diminish. The columns of sidereal time of semidiameter passing meridian, etc., do not seem to need any explanation, except that they all refer to the moment of transit. The column *Bright Limbs* is given to indicate to the observer which limbs are illuminated. When two opposite limbs are both so nearly full that they can be well observed, both are indicated; and the one which is deficient is printed in smaller type. When the illumination is so nearly equal that no choice can be made between them, both are printed in large type.

Pages 393—410 contain the geocentric apparent right ascensions and declinations of the seven major planets, and their semidiameters and horizontal parallaxes, for the moments of all those transits over the meridian of Washington which can be observed.

PART III—PHENOMENA.

This portion of *The American Ephemeris and Nautical Almanac* gives the principal astronomical phenomena of the year, reduced to Washington mean time, except in the case of the eclipses and the data for the rings of Saturn, which are given in Greenwich mean time.

Pages 412—418 inclusive contain the elements necessary for computing the eclipses of the sun and a transit of Mercury which occur during the year.

The eclipse-elements are given for the moment of conjunction of the sun and moon in right ascension. The subsequent tables and results are not, however, computed from these elements unchanged; but from the accurate positions of the two bodies as interpolated for each hour of the eclipse. The principal circumstances of each eclipse are as follow: —

On the line "Eclipse begins" is given the Greenwich mean time at which the earth first touches the moon's penumbra, and the longitude and latitude of the point of touching.

The "Central eclipse begins" when the axis of the moon's shadow first touches the earth, and the longitude and latitude of the point of touching follow.

"Central eclipse at noon" indicates the moment when the axis of the shadow is coincident with the plane of the meridian at the point of its intersection with the earth's surface. To the observer at this point, the eclipse will be central at the moment of apparent noon.

"Central eclipse ends" and "Eclipse ends" have the converse meaning of the beginning.

Maps of the Eclipses.—The regions in which each eclipse is visible, are shown upon the maps given in connection with them. From these maps may also be derived the approximate determination of the times of beginning and ending, and of the magnitude of the eclipses at any place. The dotted curves show the outlines of the shadow for each hour of Greenwich mean time and therefore pass through all the places where the eclipse begins or ends at that hour. To find at what hour the eclipse begins at any place, we determine by inspection between what pair of these curved lines the place is situated. The eclipse will then begin between these two hours of Greenwich mean time: the fraction of the hour may be determined by dividing the hour proportionally to the space which it represents on the map. This division may be a little more exact by allowing for the changes in this space as indicated by their varying width. The Greenwich mean time thus found must be reduced to local mean time by applying the longitude.

As an example, suppose we wish to find the time at which the eclipse of 1894, April 5, begins and ends at Chicacole.

For the beginning we compare the distance of the place from the curves of 14^h and 15^h and we find it to correspond to about 20 minutes from the former, therefore the time of beginning is approximately $13^h\ 40^m$; for the end we compare the distance of the place from the curves of 16^h and 17^h and find it to be about 18 minutes from the former, therefore the approximate time of end is $16^h\ 18^m$, both of which are probably correct to within 2 or 3 minutes. Changing to local mean time the result will be: —

		Beginning.		Ending.
		d h m		h m
Greenwich mean time	April	5 13 40		16 18
Longitude East		5 36		5 36
Local mean time	April	5 19 16	April	5 21 54

In the case of total and annular eclipses, a rough estimate of the magnitude of the eclipse may be obtained from the position of the place relatively to the central line and to the limit. On the central line, the eclipse is annular or total, while on the limit, the limb of the moon only grazes that of the sun.

More Accurate Computations.—A more accurate determination of the phases as visible at any point of the earth's surface may be obtained from the Besselian elements which are given for every ten minutes of Greenwich mean time. Their geometric signification is as follows: —

Let us imagine a plane passing through the centre of the earth, perpendicular to the right line joining the centres of the sun and moon. This latter line is the axis of the moon's shadow, and the plane is called the *fundamental plane.* We take the intersection of this plane with that of the earth's equator as the axis of X, and the centre of the earth as the origin of co-ordinates. The axis of Y is perpendicular to that of X, and directed toward the north; x and y are then the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle d, of which the sine and cosine are both given, is the declination of that point of the celestial sphere toward which the axis of the shadow is directed; this direction being that from the earth toward the moon and sun. The angle μ is the Greenwich hour-angle of this same point of the celestial sphere.

The quantities l and l' are the radii of the shadow-cones upon the fundamental plane, l corresponding to the penumbra, and l' to the umbra, or annulus. The notation is that of CHAUVENET's *Spherical and Practical Astronomy*, in which l' is regarded as positive for an annular, and negative for a total eclipse.

The angles f and f', the tangents of which are given, are the angles which the elements of the respective shadow-cones make with the axis of the shadow; or, they are the semi-angles of the two cones.

At the bottom of the table are given the logarithms of the change of x, y and μ, in one minute, in order to facilitate the interpolation to any required moment.

The method of computing the eclipse from the given elements is as follows: It is premised that the moments of beginning and ending are those at which the distance of the observer from the axis of the shadow or penumbra is equal to the radius of the latter at the point of observation. To find such distance and radius we compute—

(1) The co-ordinates, ξ, η and ζ, of the observer, at some assumed moment of Greenwich mean time, as near as practicable to the true time of the required phase, together with their variations for one minute.

(2) The co-ordinates x and y of the axis of the shadow at the same moment, which, with their variations for one minute, are taken from the tables of elements.

(3) Hence, the position and motion of the observer relative to the axis of the shadow.

(4) The radius of the penumbra or umbra at a distance from the fundamental plane equal to that of the observer.

(5) Then, assuming the motions to be uniform, we determine the time required for the observer to be brought to a distance from the axis of the shadow equal to this radius.

The formulæ and directions for the several steps in the computation are as follow:—

(1) Find the geocentric co-ordinates of the station referred to the earth's equator, which are represented by $\rho \cos \varphi'$ and $\rho \sin \varphi'$, ρ being the distance from the centre of the earth, and φ' the geocentric latitude. These may be obtained from geodetic tables, or may be computed from the following table by the formulæ—

$$\rho \cos \varphi' = F \cos \varphi$$

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$

φ being, as usual, the geographic latitude.

Table for Computing the Geocentric Co-ordinates of a Place.

φ	Log F.		Log G.	
0°	0.00000		0.00302	
5	0.00001	1	0.00300	2
10	0.00005	4	0.00297	3
15	0.00010	5	0.00292	5
20	0.00018	8	0.00284	8
25	0.00027	9	0.00275	9
30	0.00038	11	0.00264	11
35	0.00050	12	0.00252	12
40	0.00062	12	0.00239	13
45	0.00075	13	0.00226	13
50	0.00088	13	0.00213	13
55	0.00101	13	0.00201	12
60	0.00113	12	0.00189	12
65	0.00124	11	0.00178	11
70	0.00133	9	0.00169	9
75	0.00141	8	0.00161	8
80	0.00146	5	0.00155	6
85	0.00150	4	0.00152	3
90	0.00151	1	0.00151	1

For the assumed Greenwich mean time of computation, take from the table of elements the values of sin d, cos d, and μ. Put:

λ, the longitude west from Greenwich. The co-ordinates of the observer will then be:—

$$\xi = \rho \cos \varphi' \sin (\mu - \lambda)$$
$$\eta = \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (\mu - \lambda)$$
$$\zeta = \rho \sin \varphi' \sin d + \rho \cos \varphi' \cos d \cos (\mu - \lambda)$$

and their variations in one minute of mean time will be:—

$$\xi' = [7.63992]\, \rho \cos \varphi' \cos (\mu - \lambda)$$
$$\eta' = [7.63992]\, \rho \cos \varphi' \sin d \sin (\mu - \lambda) = [7.63992]\, \xi \sin d$$

ζ' is not wanted.

(2) The co-ordinates x and y of the axis of the shadow are taken from the tables of elements for the same assumed moment of Greenwich mean time, together with their variations for one minute, which are equal to one-tenth of the differences of two consecutive numbers. The variations for one minute we represent by x' and y'. Their logarithms are given at the foot of the tables.

(3) The distance m and position-angle M of the axis of the shadow relative to the observer, and the relative motions, n and N, are computed by the formulæ:—

$$m \sin M = x - \xi$$
$$m \cos M = y - \eta$$
$$n \sin N = x' - \xi'$$
$$n \cos N = y' - \eta'$$

(4) The radius L of the shadow or penumbra at the distance ζ from the fundamental plane is computed by the formula

$$L = l - \zeta \tan f$$

l and f being found in the table of elements, and ζ computed in (1).

(5) If the time chosen for computation is exactly that of the beginning or end of the eclipse, we shall have—

$$m = L$$

But, as this condition can scarcely ever be fulfilled on a first trial, a correction τ to the assumed time is computed thus: Find the angle ψ from the equation,

$$\sin \psi = \frac{m \sin (M - N)}{L}$$

There will be two values to this angle, of which one will be in the first and the other in the second quadrant when sin ψ is positive, and one in the third and the other in the fourth when sin ψ is negative. But, simplicity will be gained by taking only that value of ψ for which cos ψ is positive. This value lies between the limits + 90° and — 90°. The correction τ to the assumed time will be found in minutes, from—

For beginning: $$\tau = -\frac{m \cos (M - N)}{n} - \frac{L \cos \psi}{n}$$

For ending: $$\tau = -\frac{m \cos (M - N)}{n} + \frac{L \cos \psi}{n}$$

One such pair of values of τ cannot, however, give the times of both beginning and ending with accuracy. To attain accuracy we must, in commencing the computation, assume two times, one near that of beginning, and another near that of ending. These approximate times may be derived from the chart of the eclipse. The computation for the first assumed time will give a small value of τ which, applied to the assumed time, will give a nearly correct time for the beginning of the eclipse, and a large value which, added to the assumed time, will give an inaccurate time of ending. The computation for the second assumed time will give a small and nearly correct value of τ, to be applied to the assumed time for the end, and a large negative and inaccurate one to be subtracted for the beginning. We shall thus deduce two times of each phase only one of which is to be considered approximately correct.

The more accurate times of beginning and ending may now be taken in place of the first assumed ones, and the computation may be repeated from the beginning, leading to a pair of values of τ, which should be very small and accurate. Such a repetition of the computation will in general be advisable, to guard against accidental numerical errors. The following theorem will, however, enable us to obtain a second approximation to the true times of each phase without repeating the computation.

THEOREM.—*The error of each result is approximately proportional to the square of the correction* τ, *multiplied by the sine of the sun's hour-angle*, $(\mu-\lambda)$, *for the middle of the interval between the time of computation and that of the phase.*

To apply this theorem we find the two values of $\tau^2 \sin(\mu-\lambda)$ corresponding to the required phase. We then find the ratio of these quantities—which will commonly be a large number, and divide the difference of the results by this ratio. The quotient will be a correction to be applied to the more accurate result in such a way as to make it deviate yet more from the less accurate one. This correction should be positive in the local forenoon, and negative in the afternoon, and its value should never materially exceed $0^m.001\,\tau^2$.

Unless the times chosen for computation are unusually in error, say ten minutes or more, the corrected results thus obtained will be theoretically correct within less than a second. But to guard against numerical errors it is better, after making this final correction, to repeat the computations so far as to obtain new values of m and L for the corrected times. If these two quantities agree within a unit of the fourth place of decimals, the times employed are generally correct within a second of time. If they differ too widely, further corrections and computations may be made by the computer according to his own judgment.

It may be remarked that the uncertainty of the ephemerides is such that a prediction may be several seconds in error from this unavoidable cause alone.

Position-angle of Point of Contact.—The position-angle P, of the point of contact, reckoned from the north point of the sun's limb toward the east, is found by the formula

For beginning: $P = N - \psi \pm 180°$
For end: $P = N + \psi$

it being assumed that, in each case, the value of ψ is taken between the limits $\pm$ 90°.

Computation of the Solar Eclipse of 1894, April 5, for Vizagapatam, India, whose position is—

Latitude, $\varphi = +\ 17°\ 41'\ 34''$
Longitude, $\lambda = -\ 83°\ 17'\ 42''$

Constants for the given place:—

$$\rho \sin \varphi' = 9.47999$$
$$\rho \cos \varphi' = 9.97910$$

From the Eclipse Charts we find the approximate times of the phases to be—

	d	h	m	
Beginning April	5	13	40	Greenwich Mean Time.
Annulus		14	52	
Ending		16	10	

		Beginning.	Annulus.	Ending.
Greenwich Mean Time,	April	$5^d\ 13^h\ 40^m$	$14^h\ 52^m$	$16^h\ 10^m$
	μ	204° 22′ 0″	222° 52′ 18″	241° 52′ 42″
	λ	− 83 17 42	− 83 17 42	− 83 17 42
	$\mu-\lambda$	287 39 42	306 10 0	325 10 24
	$\rho \cos \varphi'$	9.97910	9.97910	9.97910
	$\sin(\mu-\lambda)$	9.97903 *n*	9.90704 *n*	9.75671 *n*
	$\log \xi$	9.95813 *n*	9.88614 *n*	9.73581 *n*
	ξ	− 0.90810	− 0.76939	− 0.54426

Greenwich Mean Time,	April	Beginning. $5^d\ 13^h\ 40^m$	Annulus. $14^h\ 52^m$	Ending. $16^h\ 10^m$
	$\rho \sin \varphi'$	9.47999	9.47999	9.47999
	$\cos d$	9.99729	9.99728	9.99726
		9.47728	9.47727	9.47725
	(1)	+ 0.30011	+ 0.30010	+ 0.30009
	$\rho \cos \varphi$	9.97910	9.97910	9.97910
	$\sin d$	9.04666	9.04792	9.04921
	$\cos(\mu-\lambda)$	9.48201	9.77095	9.91428
		8.50777	8.79797	8.94259
	(2)	+ 0.03219	+ 0.06280	+ 0.08762
(1)−(2)	η	+ 0.26792	+ 0.23730	+ 0.21247
	$\rho \sin \varphi' \sin d$	8.52665	8.52791	8.52920
	(3)	+ 0.03362	+ 0.03372	+ 0.03382
	$\rho \cos \varphi' \cos d \cos(\mu-\lambda)$	9.45840	9.74733	9.89064
	(4)	+ 0.28734	+ 0.55890	+ 0.77740
(3)+(4)	ζ	+ 0.32096	+ 0.59262	+ 0.81122
	const. log	7.63992	7.63992	7.63992
	$\rho \cos \varphi' \cos(\mu-\lambda)$	9.46111	9.75005	9.89338
	$\log \xi'$	7.10103	7.38997	7.53330
	ξ'	+ 0.00126	+ 0.00245	+ 0.00341
	const. log	7.63992	7.63992	7.63992
	$\xi \sin d$	9.00479 *n*	8.93406 *n*	8.78502 *n*
	$\log \eta'$	6.64471 *n*	6.57398 *n*	6.42494 *n*
	η'	− 0.00044	− 0.000375	− 0.000266
	$x-\xi$	− 0.43802	+ 0.00123	+ 0.40247
	$y-\eta$	− 0.33957	+ 0.00171	+ 0.36296
	$x'-\xi'$	+ 0.00676	+ 0.00558	+ 0.00462
	$y'-\eta'$	+ 0.00476	+ 0.00469	+ 0.00458
	$m \sin M$	9.64149 *n*	7.08991	9.60474
	$m \cos M$	9.53093 *n*	7.23300	9.55986
	$\tan M$	0.11056	9.85691	0.04488
	M	232° 13′ 0″	35° 43′ 38″	47° 57′ 20″
	$\cos M$	9.78725 *n*	9.90945	9.82588
	$\log m$	9.74368	7.32355	9.73398
	$n \sin N$	7.82995	7.74663	7.66464
	$n \cos N$	7.67761	7.67117	7.66087
	$\tan N$	0.15234	0.07546	0.00377
	N	54° 51′ 0″	49° 57′ 10″	45° 14′ 56″
	$\cos N$	9.76022	9.80850	9.84759
	$\log n$	7.91739	7.86267	7.81328
	$\tan f$	7.66934	7.66723	7.66933
	$\log \zeta$	9.50642	9.77277	9.90914
		7.17576	7.44000	7.57847

		Beginning.	Annular.	Ending.
Greenwich Mean Time,	April	$5^d\ 13^h\ 40^m$	$14^h\ 52^m$	$16^h\ 10^m$
	$\zeta \tan f$	0.00150	0.00275	0.00379
	l	0.54997	0.00396	0.54971
	L	0.54847	0.00121	0.54592
	M−N	177° 22′ 0″	− 14° 13′ 32″	2° 42′ 24″
	$\sin (M-N)$	8.66223	9.39048 *n*	8.67415
	$\log m$	9.74368	7.32355	9.73398
		8.40591	6.71403 *n*	8.40813
	$\log L$	9.73915	7.08279	9.73713
	$\sin \psi$	8.66676	9.63124 *n*	8.67100
	ψ	2° 39′ 40″	− 25° 19′ 40″	2° 41′ 13″
	$\log \frac{m}{n}$	1.82629	9.46088	1.92070
	$\cos (M-N)$	9.99954 *n*	9.98648	9.99951
		1.82583 *n*	9.44736	1.92021
	$-\frac{m}{n} \cos (M-N)$	+ 66.961	− 0.2801	− 83.216
	$\log L$	9.73915	7.08279	9.73713
	$\cos \psi$	9.99953	9.95611	9.99952
	$\operatorname{colog} n$	2.08261	2.13733	2.18672
		1.82129	9.17623	1.92337
	$\frac{L \cos \psi}{n}$	∓ 66.266	∓ 0.1505	± 83.824
		m	m	m
	τ	+ 0.695	− 0.43 − 0.13	+ 0.608
		d h m	h m	h m
	T	April 5 13 40.0	14 52.0	16 10.0
	t	April 5 13 40.695	14 51.57 14 51.87	16 10.608
	λ	− 5 33.18	− 5 33.18	− 5 33.18
		d h m	h m	h m
Local Mean Time,		April 5 19 13.875	20 24.75 20 25.05	21 43.788

Therefore we have

		d	h	m	s	
Beginning of the eclipse,	April	5	19	13	52.5	Local Mean Time.
Beginning of annulus,	"	5	20	24	45.0	
End of annulus,	"	5	20	25	3.0	
End of the eclipse,	"	5	21	43	47.3	

Angle of position:

	Beginning.		Ending.	
	°	′	°	′
N	54	51	45	14.9
ψ (+ 180)	177	20.3	2	41.2
P	232	11.3	47	56.1

from the north point of the sun's disk towards the east for direct image.

Elements of Occultations.—Pages 420—449 give the elements for the prediction of the times of occultation of stars and planets by the moon. In the columns referring to the star, those headed *Red'ns from* 1894.0 give the quantities necessary to reduce the mean place of the star at the beginning of 1894 to its apparent place at the time of occultation. These reductions are sufficiently accurate to be definitive.

The quantities in the following five columns are all given for the moment of geocentric conjunction of the star and moon in right ascension. Let there be a line passing from the star through the centre of the moon, and let a plane perpendicular to this line pass through the centre of the earth: this plane will be the fundamental plane for the occultation. The system of co-ordinates is similar to that already described for eclipses. The cone circumscribing the moon and star may be regarded as a cylinder having everywhere the same diameter as the moon. This cylinder will intercept the fundamental plane in a circle of which the linear diameter will be the same as that of the moon.

The *Washington Mean Time* is the moment at which the two bodies are in geocentric conjunction in right ascension. At this moment the co-ordinate x of the axis of the cylinder on the fundamental plane has the value zero. The column *Hour-Angle H* gives the common geocentric hour-angle of the moon and star at the same moment, counted from the meridian of Washington—positive toward the west and negative toward the east. Column Y gives the co-ordinate y of the axis of the cylinder upon the fundamental plane at the same moment. Columns x' and y' give the hourly variation of x and y. The linear unit in these columns is the earth's equatorial radius. The limiting parallels, north and south, show the extreme limits of latitude within which the occultation will be visible.

By the aid of these elements, the Washington mean time of immersion and emersion of a star behind the limb of the moon may be computed for any part of the earth by a method nearly the same as that already explained for computing eclipses, only more simple.

We shall first show how to compute an isolated occultation for a particular place, assuming it to be visible at that place, and then show how all the occultations which will be visible at a place may be selected and computed by a more rapid process.

(1) The geocentric co-ordinates of the place, $\rho \sin \varphi'$ and $\rho \cos \varphi'$, are to be computed with three or four places of decimals by the formulæ,

$$\rho \sin \varphi' = \frac{\sin \varphi}{G}$$
$$\rho \cos \varphi' = F \cos \varphi$$

already given in connection with the eclipses.

As in the case of eclipses, it is necessary to have an approximate time of the phenomenon, corresponding to that obtained from the charts of the eclipses. The quantity H being the Washington west hour-angle of the two bodies at the moment of geocentric conjunction, $H - \lambda$ will be the local hour-angle of the star at this same moment. Let us call this angle h_0, putting

$$h_0 = H - \lambda$$

where λ is the longitude west of *Washington.*

The next step will then be to find the approximate moment of apparent conjunction in right ascension as seen from the place. An approximate correction to reduce the time and hour-angle for geocentric conjunction to those for apparent conjunction may be taken from Mr. Downes's table, on pages 452—453. This correction will have the same sign as h_0.

When this table is not available, the correction may be computed thus: Compute the quantities ξ_0, ξ' and τ from the formulæ,

$$\xi_0 = \rho \cos \varphi' \sin h_0$$
$$\xi' = [9.4192] \cos \left(h_0 + \tfrac{1}{8} h_0\right)$$
$$\tau = \frac{\xi_0}{x' - \xi'}$$

τ will then be the approximate interval between the times of geocentric and local conjunction.

By applying it to the Washington mean time of the former, as given with the elements, we shall have the Washington mean time of the latter within a few minutes.

The average duration of an occultation is about an hour. Thence, by adding $0^h.5$ to and subtracting it from the mean time of apparent conjunction, we shall have approximate times of the phases of immersion and emersion for farther computation. Let us then put,

$\tau_1 = \tau - 0^h.5$

$\tau_2 = \tau + 0^h.5$

T, the Washington mean time of geocentric conjunction in R. A.

d, the declination of the star.

(2) Compute for the moments $T + \tau_1$ and $T + \tau_2$ the following quantities, in which we write τ for each of the quantities τ_1 and τ_2. The latter, when used as angles, are to be changed to arc by multiplying by 15, and the minutes are to be further increased by one-sixth the number of degrees in order to reduce to the sidereal hour-angle.

$$\begin{aligned}
\xi &= \rho \cos \varphi' \sin (h_0 + \tau) \\
\eta &= \rho \sin \varphi' \cos d - \rho \cos \varphi' \sin d \cos (h_0 + \tau) \\
\xi' &= [9.4192]\ \rho \cos \varphi' \cos (h_0 + \tau) \\
\eta' &= [9.4192]\ \rho \cos \varphi' \sin d \sin (h_0 + \tau) = [9.4192]\ \xi \sin d \\
x &= x' \tau \\
y &= Y + y' \tau
\end{aligned}$$

Compute m, M, n and N from the equations

$$\begin{aligned}
m \sin M &= x - \xi \\
m \cos M &= y - \eta \\
n \sin N &= x' - \xi' \\
n \cos N &= y' - \eta' \\
n' &= \frac{n}{60} = [8.2218]\ n \\
\sin \psi &= [0.5650]\ m \sin (M - N)
\end{aligned}$$

Then, t_1 and t_2 from the equations

$$t_1 = -\frac{m}{n'} \cos (M - N) - \frac{[9.4350]}{n'} \cos \psi \quad \text{(Beginning.)}$$

$$t_2 = -\frac{m}{n'} \cos (M - N) + \frac{[9.4350]}{n'} \cos \psi \quad \text{(End.)}$$

The quantities t_1 and t_2 will then be the corrections in minutes to be applied to the respective times $T + \tau_1$ and $T + \tau_2$ to obtain the Washington mean times of the phases.

As in the case of eclipses, the small value of t_1 will give an accurate result for one phase, and the large value an inaccurate result for the other. Both accurate results may then be corrected by comparison with the inaccurate one, in the way described for eclipses, and a result obtained which will probably be correct within a fraction of a minute of time.

As a check upon the result, it will be advisable to compute ξ, η, x and y for the moments finally obtained. If the times are correct these quantities will fulfil the condition,

$$\sqrt{(x - \xi)^2 + (y - \eta)^2} = 0.2723$$

If $\log m \sin (M - N) = 9.4350$ nearly, a recalculation will generally be necessary to determine whether, numerically, $\sin \psi < 1$, or $\sin \psi > 1$. In the latter case, the impossible value of $\sin \psi$ indicates that an occultation at the given place is impossible, unless the computed distance from the moon's limb is within the errors of the ephemerides of the moon and star.

In such cases of near approach to the moon's limb, we may take $\psi = 90°$, or $270°$, according as $\sin (M - N)$ is positive or negative; and for finding the time of nearest approach,

$$t = -\frac{m \cos (M - N)}{n'}$$

Putting π for the moon's horizontal parallax, the distance from the moon's limb will be,

$$\pi\,[\,m \sin(M - N) - 0.2723\,]$$

disregarding the sign of $\sin(M - N)$; or, allowing for the augmentation of the semidiameter,

$$\pi\,[m \sin(M - N) - 0.2723]\,[1 + z \sin \pi\,]$$

where

$$z = \rho \cos \varphi' \cos d \cos(h_0 + \tau) + \rho \sin \varphi' \sin d$$

The position-angle P, of the line from the moon's centre to the star at the times of contact, reckoned from the north point toward the east, is given by the formulæ: —

$$P = N - \psi \qquad \text{for immersion,}$$
$$P = N + \psi \pm 180^\circ \quad \text{for emersion,}$$

it being supposed that the value of ψ, in each case, is taken between the limits ± 90°.

To find the angle from the vertex, we compute the angle C from the formula,

$$\tan C = \frac{\xi + t\,\xi'}{\eta + t\,\eta'}$$

in which the value of t corresponding to the phase is to be used. Then

$$V = P - C$$

is the angle from the vertex, also reckoned from the north toward the east.

As an example of an isolated occultation, we will compute that of β Virginis, on March 20, 1894, for Hanover, whose position is

$$\varphi = +\ 43^\circ\ 42'\ 15''$$
$$\lambda = -\ \ 0^{\mathrm{h}}\ 19^{\mathrm{m}}\ 4^{\mathrm{s}}.13$$

Constants for the given place,

$$\rho \sin \varphi' = 9.83722$$
$$\rho \cos \varphi' = 9.85978$$

From the elements on page 426, we have

$$H = -\ \overset{\mathrm{h}}{0}\ \overset{\mathrm{m}}{31.7}$$
$$h_0 = H - \lambda = -\ 0\ 12.631$$

From DOWNES's Table, pages 452 and 453, or from the formulæ on page 512, we find the correction to the Washington mean time of geocentric conjunction to be about -5^{m}, therefore the Washington mean time of apparent conjunction at the given place is March $20^{\mathrm{d}}\ 11^{\mathrm{h}}\ 13^{\mathrm{m}}.7$; adding and subtracting 30^{m}, we shall have the approximate Washington mean times of immersion and emersion to be used in the computation, thus:

$$\tau_1 = -\ \overset{\mathrm{h}}{0}\ \overset{\mathrm{m}}{35} \qquad T + \tau_1 = \text{March}\ \overset{\mathrm{d}}{20}\ \overset{\mathrm{h}}{10}\ \overset{\mathrm{m}}{43.7}$$
$$\tau_2 = +\ 0\ 25 \qquad T + \tau_2 = \qquad 20\ 11\ 43.7$$

		Immersion.	Emersion.
		d h m	h m
Washington Mean Time,	March	20 10 43.7	11 43.7
		h m	h m
	h_0	− 0 12.631	− 0 12.631
	τ (in sidereal time)	− 0 35.096	+ 0 25.068
	$h_0 + \tau$ (in arc)	−11° 55′ 54″	+ 3° 6′ 33″
	$\rho \cos \varphi'$	9.85978	9.85978
	$\sin(h_0 + \tau)$	9.31544 *n*	8.73431
	$\log \xi$	9.17522 *n*	8.59409
	ξ	− 0.14970	+ 0.03927

		Immersion.	Emersion.
Washington Mean Time,	March	20^d 10^h $43^m.7$	11^h $43^m.7$
	$\rho \sin \varphi'$	9.83722	9.83722
	$\cos d$	9.99963	9.99963
		9.83685	9.83685
	(1)	+ 0.68683	+ 0.68683
	$\rho \cos \varphi'$	9.85978	9.85978
	$\sin d$	8.61436	8.61436
	$\cos (h_0 + \tau)$	9.99051	9.99936
		8.46465	8.47350
	(2)	+ 0.02915	+ 0.02975
(1)−(2)	η	+ 0.65768	+ 0.65708
	const. log	9.41920	9.41920
	$\rho \cos \varphi' \cos (h_0 + \tau)$.	9.85029	9.85914
	$\log \xi'$	9.26949	9.27834
	ξ'	+ 0.18599	+ 0.18982
	const. log	9.41920	9.41920
	$\xi \sin d$	7.78958 *n*	7.20845
	$\log \eta'$	7.20878 *n*	6.62765
	η'	− 0.00162	+ 0.00042
	og x'	9.71709	9.71709
	$\log \tau$	9.76592 *n*	9.61979
	$\log x$	9.48301 *n*	9.33688
	x	− 0.30410	+ 0.21721
	$\log y'$	9.43632 *n*	9.43632 *n*
	$\log y' \tau$	9.20224	9.05611 *n*
	$y' \tau$	+ 0.15931	− 0.11379
	Y	+ 0.73810	+ 0.73810
	y	+ 0.89741	+ 0.62431
	$x - \xi$	− 0.15440	+ 0.17794
	$y - \eta$	+ 0.23973	− 0.03277
	$x' - \xi'$	+ 0.33531	+ 0.33148
	$y' - \eta'$	− 0.27148	− 0.27352
	$m \sin M$	9.18865 *n*	9.25028
	$m \cos M$	9.37972	8.51548 *n*
	$\tan M$	9.80893 *n*	0.73480 *n*
	M	327° 12′ 58″	100° 26′ 5″
	$\sin M$	9.73358 *n*	9.99276
	$\log m$	9.45507	9.25752
	$n \sin N$	9.52544	9.52045
	$n \cos N$	9.43374 *n*	9.43699 *n*
	$\tan N$	0.09170 *n*	0.08346 *n*
	N	128° 59′ 44″	129° 31′ 41″
	$\cos N$	9.79883 *n*	9.80377 *n*
	$\log n$	9.63491	9.63322
	colog 60	8.22185	8.22185
	$\log n'$	7.85676	7.85507

		Immersion.	Emersion.
Washington Mean Time,	March	$20^d\ 10^h\ 43^m.7$	$11^h\ 43^m.7$
	const. log	0.56500	0.56500
	$\log m$	9.45507	9.25752
	$\sin (M - N)$	9.49509 n	9.68685 n
	$\sin \psi$	9.51516 n	9.50937 n
	ψ	− 19° 6′ 52″	− 18° 51′ 6″
	$\log \frac{m}{n'}$	1.59831	1.40245
	$\cos (M - N)$	9.97766 n	9.94143
		1.57597 n	1.34388
	$-\frac{m}{n'} \cos (M - N)$	+ $37^m.667$	− $22^m.074$
	const. log	9.43500	9.43500
	$\cos \psi$	9.97538	9.97606
	colog n'	2.14324	2.14493
		1.55362	1.55599
	$\frac{[9.43500] \cos \psi}{n'}$	∓ $35^m.778$	∓ $35^m.974$
	t	+ 1.889	+ 13.900

		d h m	h m
	T	March 20 10 43.7	11 43.7
Washington Mean Time,		March 20 10 45.589	11 57.600
	λ	− 0 19.069	− 0 19.069
Hanover Mean Time,		March 20 11 4.658	12 16.669
Angle of position :		° ′	° ′
	N	128 59.7	129 31.7
	ψ (+ 180°)	− 19 6.9	− 18 51.1
	P	148 6.6	290 40.6

from the north point of the moon's limb towards the east for direct image.

Prediction of Many Occultations for a Given Place.—When it is desired to predict all the occultations which will be visible at some one place, tables may be constructed and applied in such a way as to greatly diminish the labor of computation. In using such tables, the most convenient course will be to find for each occultation the hour-angle of the star at the moment of apparent conjunction in right ascension, as seen from the place of observation. The table of elements, pages 420—449, gives H, the Washington hour-angle at the moment of geocentric conjunction. The corresponding geocentric hour-angle at the place will be

$$h_0 = H - \lambda \qquad (\lambda = \text{west longitude from Washington}).$$

The moment of apparent conjunction, as seen from the station, will be given by the condition $\xi = x$; or, using the values of ξ and x,

$$\rho \cos \varphi' \sin h = x' \tau$$

h being the west hour-angle of the star at the moment in question, and τ the interval, in hours of mean time, which has elapsed since geocentric conjunction. We shall therefore have,

$$h = h_0 + \tau$$

for the hour-angle at the end of the interval τ after geocentric conjunction. In strictness, τ should here be multiplied by the factor $1 + \frac{1}{365.25}$, because the star moves a little more than 15° in an hour of mean time; but the error arising from the neglect of the factor is too small to be important, as it will affect the predicted time of conjunction by less than 10 seconds. The equation for finding τ is therefore,

$$\rho \cos \varphi' \sin (h_0 + \tau) = x' \tau$$

The quantities h_0 and x' being derived immediately from the data of the Ephemeris, the quantity τ is readily obtained by successive approximation, and may be tabulated as a function of h_0 and x'. The computation of τ is effected as follows. We have

$$\sin (h_0 + \tau) = \sin h_0 + 2 \sin \tfrac{1}{2} \tau \cos (h_0 + \tfrac{1}{2} \tau) \tag{1}$$

The value of τ in arc being seldom more than 24° we may put τ itself for $2 \sin \frac{1}{2} \tau$. The equation will then become

$$\rho \cos \varphi' \sin h_0 + \tau \rho \cos \varphi' \cos (h_0 + \tfrac{1}{2}\tau) = x' \tau$$

from which we find

$$\tau = \frac{\rho \cos \varphi' \sin h_0}{x' - \rho \cos \varphi' \cos (h_0 + \frac{1}{2}\tau)} \tag{2}$$

To tabulate τ, we must first have a table of the quantities

$$\begin{aligned} \xi &= \rho \cos \varphi' \sin h \\ \xi' &= [9.41916]\, \rho \cos \varphi' \cos h \end{aligned} \tag{3}$$

which table may be formed for every 10 minutes (in time) of h. If we then put ξ_0 for the value of ξ corresponding to $h = h_0$ and ξ'_1 for the value of ξ' corresponding to $h = h_0 + \frac{1}{2}\tau$, we shall have

$$\tau = \frac{\xi_0}{x' - \xi'_1} \tag{4}$$

Since we must know the value of τ, approximately, before we can take ξ'_1 from the table, this equation can be solved only by successive approximations. The approximations converge so rapidly as to offer no difficulty. It will be best to begin by comparing values of τ for the two extremes of x', namely, $x'=0.48$ and $x'=0.60$, because the approximate values of τ can then be interpolated for all the intermediate values of x'. For the first approximation may be taken—

$$\begin{aligned} \tfrac{1}{2}\tau &= 50^{\mathrm{m}} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.48) \\ \tfrac{1}{2}\tau &= 40^{\mathrm{m}} \sin \tfrac{4}{3} h_0 \quad (\text{for } x' = 0.60) \end{aligned} \tag{5}$$

or, the approximate values of τ may be taken from Mr. DOWNES's table, pages 452—453. It will be best to make the computation for every 30^{m} of h_0, and to find the intermediate values of τ for every 10^{m} by interpolation. Then for each 30^{m} of h_0 we take ξ' from a table with the argument $h_0 + \frac{1}{2}\tau$, and log ξ with the argument h_0, and thence compute τ by (4). If the value of τ thus arrived at differs more than 3^{m} from that employed in taking out ξ', a new value may be used to correct ξ', and the computation may be repeated. The values corresponding to $x' = 0.51$, $x' = 0.54$, and $x' = 0.57$, can then be computed with the single interpolation of approximate values of τ, and afterward the table can be extended by interpolation to every 0.01 of x' between $x' = 0.48$ and $x' = 0.60$. It will be best to compute τ in the first place to every 0.001 of an hour, and to drop the last figure in forming the definitive table. The table thus formed will be called *Table I.*

The values of η and η' may then be tabulated for every degree of the star's declination, and every 10^{m} of h. It is a mere question of convenience whether to compute the table for negative values of d, since by putting

$$\begin{aligned} \eta_1 &= \rho \sin \varphi' \cos d \\ \eta_2 &= -\rho \cos \varphi' \sin d \cos h \end{aligned}$$

η_1 may be given in a table of single-entry; and taking η_2 from the table of double-entry for a positive d, we shall have

$$\eta = \eta_1 \pm \eta_2$$

the lower sign being used for a negative d. But the extension of the table for η to negative values of d is so readily made that it will probably be found better to do it, so as to save taking out η_1 and η_2 separately.

This table for η will be called *Table II*, and the corresponding one for η' with the same arguments *Table III.* The precepts for using the tables will then be as follow:—

From Table I with the arguments x' and $H - \lambda = h_0$ take out the value of τ. It will be sufficient to use the nearest 0.01 of x'. τ will be of the same sign as h_0. Then, enter Table II with the arguments d (the star's declination) and $h = h_0 + \tau$, and take out the value of η. Form the quantities $y = Y + y' \tau$, and $y - \eta$. If the latter quantity lies between the limits ± 0.28, it is almost certain that there will be an occultation. If it falls without the limits ± 0.33, it is almost certain that there will not be an occultation. Between the years 1881 and 1894 these last limits may be reduced to ± 0.32, and cases near this limit may be rejected if y is small. A convenient rule to adopt will be—

$$\begin{array}{rl} y' < 0.10, & = \pm 0.29 \\ 0.10 < y' < 0.15, & = \pm 0.30 \\ 0.15 < y' < 0.20, & = \pm 0.31 \\ 0.20 < y' & = \pm 0.33 \text{ or } \pm 0.32 \end{array}$$

Here, only the absolute value of y' is to be considered, without respect to its algebraic sign.

If $y - \eta$ falls between the limits thus indicated, take the values of ξ' and η' from the appropriate tables and compute v, Q and Δ from the equations

$$\begin{aligned} v \sin Q &= y' - \eta' \\ v \cos Q &= x' - \xi' \\ \Delta &= (y - \eta) \cos Q \end{aligned}$$

If $\Delta > 0.2723$ or $\log \Delta > 9.4350$ there will be no occultation, though the moon may graze the star when $\Delta - 0.2723$ is very small. If $\Delta < 0.2723$, compute

$$\tau_1 = -\frac{y - \eta}{v} \sin Q \qquad \cos P = \frac{\Delta}{0.2723} \qquad (P < 180^\circ)$$

$$\tau_2 = \frac{0.2723 \sin P}{v}$$

We shall then have—

Local mean time of immersion, $T - \lambda + \tau + \tau_1 - \tau_2$
Local mean time of emersion, $T - \lambda + \tau + \tau_1 + \tau_2$
Position-angle from north toward east at immersion, $180^\circ - Q - P$
Position-angle from north toward east at emersion, $180^\circ - Q + P$

In predicting the occultations for a given place, the first operation will be to go over the list of occultations in the Ephemeris, and select those which may be visible. The conditions of possible visibility are:—

1. The limiting parallels in the last columns must include the latitude of the place.

2. The quantity $H - \lambda$, taken without regard to sign, must be less than the semi-diurnal arc of the star by at least one hour. On very rare occasions an emersion might be seen in the east horizon, or an immersion in the west, when this difference is a few minutes less than an hour.

3. The sun must not be much more than an hour above the horizon at the local mean time $T - \lambda$, unless the star is bright enough to be seen in the day time.

The most convenient course will be to write the value of $-\lambda$ on the bottom of a sheet of paper, and passing through the list of occultations, pause over each one for which condition (1) is fulfilled, and examine whether conditions (2) and (3) are fulfilled. If either fails, the computer passes on. Very often it will require some examination to find whether $H - \lambda$ or $T - \lambda$ falls within the limits; in these cases, the computer may mark the occultation for trial and leave the decision for the subsequent operations. The whole list can be gone over in less than a day, and it will probably be found that about one-tenth of the occultations are marked for trial.

Phenomena of Planets and Satellites, pages 454—487.—These are, for the most part, sufficiently explained in the body of the work. The following additional explanations are added for completeness:

Disks of Mercury and Venus, pages 454—455.—The angle θ, needed in reducing meridian observations, is the angle which the arc of the great circle from the planet to the sun, makes with the arc from the planet toward the west, reckoned in the direction west, north, east, south. This position-angle is reckoned from 0° to 360°, as in the measurement of double stars, the planet taking the place of the central star. But its measure is 90° greater than that of a double star.

We may also regard θ as expressing the angle which the line of cusps makes with the meridian, the positive direction of the meridian being toward the north, and the positive direction of the line of cusps that in which a person following this line would have the illuminated portion of the disk on his right.

Satellites and Disk of Mars, page 456.—This page gives the Washington mean time of the greatest eastern and western elongations, the position-angles, and the distance of the satellites from the centre of the planet during the month preceding and following opposition.

Satellites of Jupiter, pages 457—481.—The times of phenomena are explained at the foot of each page; the diagram is on page 457.

Phenomena, pages 488—489.—The conjunctions, quadratures, and oppositions of the planets with respect to the sun, give the hours when the longitude of each planet differs from that of the sun by 0°, 90° or 180°.

The conjunctions of the moon and planets with each other are given in right ascension. The degrees and minutes to the right show the difference of declination at the moment of conjunction.

Latitude by Observed Altitude of Polaris.—Table IV replaces the Tables A, B, C, D, given as a *Supplement* to the volumes of the Ephemeris for 1874—1881, and is intended for use at sea and reconnaissance on land. It will furnish an approximate value of the latitude, the probable error of which, in so far as the table is concerned, will be a few tenths of a minute of arc.

The directions for using the table are adapted to a right ascension of Polaris equal to $1^{h}\ 18^{m}.9$. Somewhat greater accuracy may be insured by substituting the right ascension of Polaris at the date of observation, from pages 302—313 of this volume.

APPENDIX.

ON THE CONSTRUCTION OF THE AMERICAN EPHEMERIS AND NAUTICAL ALMANAC FOR 1894.

The adopted constants of precession, nutation, and aberration are those of Struve and Peters, namely:—

$$\begin{aligned}\text{Precession} &= 50''.2411 + 0''.0002268\ t\\ \text{Nutation} &= 9''.2231 + 0''.000009\ t\\ \text{Aberration} &= 20''.4451\end{aligned}$$

in which t is the number of years after 1800.0.

The obliquity of the ecliptic is that of Hansen's *Tables du Soleil*, which is 0″.31 greater than that of Peters, given in the issues of this Ephemeris preceding that for 1882. A comparison of Hansen's mean obliquity with that of Peters and of Le Verrier at different epochs is given in the following table:—

Epoch.	Hansen.			Peters.	Le Verrier.	H.—P.	H.—L.
	°	′	″	″	″	″	″
1750	23	28	18.19	17.44	19.42	+0.75	−1.23
1800	23	27	54.80	54.22	55.63	+0.58	−0.83
1850	23	27	31.42	30.99	31.83	+0.43	−0.41
1900	23	27	8.02	7.76	8.03	+0.26	−0.01

The formulæ for reducing the places of the fixed stars, page 280, correspond to the *Star Tables of the American Ephemeris*, Washington, 1869.

The mean right ascensions of stars have been reduced to Newcomb's fundamental standard in the catalogue attached to the *Washington Observations for* 1870, Appendix II, with the following exceptions: The right ascensions of the 48 circumpolar stars north of 60° north declination are from Dr. Gould's *Standard Places of Fundamental Stars*, second edition, United States Coast Survey Office, 1866. Of the twelve stars south of 50° south declination, the positions of β Hydri, α Trianguli Australis, and σ Octantis, have been corrected from data furnished by Dr. Gould; while the remaining nine are, as before, from the *British Nautical Almanac* for 1848.

The right ascensions of the additional stars in the general list, whose apparent right ascensions are given in a subsequent section, have been taken partly from the *Catalogue of* 1098 *Standard Clock and Zodiacal Stars*, forming Part IV of Vol. I of *Astronomical Papers Prepared for the Use of the American Ephemeris and Nautical Almanac*, Washington, 1881; and partly from the catalogue of the Astronomische Gesellschaft of 1878. A few have been derived from recent catalogues without a rigorous reduction for equinox.

The mean declinations of stars are taken from Boss's paper in the *Report of the Northern Boundary Commission*, Washington, 1879, for all stars found therein. The declinations of all the other stars have been reduced to the same standard, except those of the additional ones above, which have been taken partly from the Astronomische Gesellschaft list, and partly from places in recent catalogues. To the apparent places of Sirius and Procyon have been applied the periodic corrections resulting from Auwers's investigations.

The values of these corrections are:—

Year.	Sirius.		Procyon	
	s	″	s	″
1894.0	$\Delta\alpha = +0.137$	$\Delta\delta = +1.05$	$\Delta\alpha = +0.068$	$\Delta\delta = +0.25$
1895.0	$\Delta\alpha = +0.116$	$\Delta\delta = +1.27$	$\Delta\alpha = +0.070$	$\Delta\delta = +0.08$

The ephemeris of the sun is constructed from **Hansen** *and* **Olufsen**'s *Tables du Soleil*, Copenhagen, 1853, except that **Struve**'s aberration has been used. This is equivalent to adding 0″.19 to the true longitudes, but it does not affect the right ascensions and declinations. The sun's rectangular equatorial co-ordinates have been computed from the longitudes and latitudes by the following formulæ:—

$$\begin{aligned} X &= R \cos \lambda \\ Y &= R \sin \lambda \cos \omega - 19.3\, R\, \beta \\ Z &= R \sin \lambda \sin \omega + 44.5\, R\, \beta \end{aligned}$$

The reductions to mean equinox, 1894.0, are computed by the formulæ,

$$\begin{aligned} \Delta X' &= + Y \sec \omega\, \Delta \lambda \sin 1'' \\ \Delta Y' &= - X \cos \omega\, \Delta \lambda \sin 1'' + Z\, \Delta \omega \sin 1'' - 9.4\, \tau\, R \sin (\lambda + 187^\circ) \\ \Delta Z' &= - X \sin \omega\, \Delta \lambda \sin 1'' - Y\, \Delta \omega \sin 1'' + 21.7\, \tau\, R \sin (\lambda + 187^\circ) \end{aligned}$$

Wherein—

λ and β	are the longitude and latitude of the sun referred to the equinox and ecliptic of the date;
ω,	the obliquity of the ecliptic;
$\Delta \lambda$,	the reduction of longitude for precession and nutation from January 0;
$\Delta \omega$,	the reduction of the mean to the apparent obliquity;
τ,	the fraction of the year since January 0.

The numerical coefficients are in units of the seventh place of decimals. The correction for latitude has been taken from **Goetze**'s paper in the *Astronomical Journal*, Vol. II, page 71.

The mean equatorial horizontal parallax of the sun, adopted from Professor **Newcomb**'s *Investigation of the Distance of the Sun and the Elements which depend on it*,* is 8″.848. The adopted semidiameter of the sun at the earth's mean distance is 16′ 2″. In the computations pertaining to eclipses, **Bessel**'s semidiameter, 15′ 59″.788 has been used.

The right ascension, declination and parallax of the moon are derived from **Hansen**'s *Tables de la Lune*, London, 1857, the mean longitude being corrected in accordance with **Newcomb**'s *Researches on the Motion of the Moon*, Part I, page 268,† and a corrected table being substituted for Table XXXIV.

The semidiameter of the moon is computed from the moon's horizontal parallax by the formula,

$$S = 0.272274\, \pi + 2''.5$$

The constant 2″.5 is omitted in the computation of eclipses and occultations, as due entirely to telescopic and ocular irradiation.

The ephemeris of Mercury is derived from Professor **Winlock**'s *Tables of Mercury*, Washington, 1864. They are based on the older theory of **Le Verrier**, published in the Additions to the *Connaissance des Temps* for 1848.

The ephemeris of Venus is derived from Mr. G. W. **Hill**'s *Tables of Venus*, Washington, 1872.

The ephemeris of Mars is derived from manuscript tables constructed from **Lindenau**'s Tables. Mr. **Hugh Breen**'s results, contained in his paper *On the Corrections of* **Lindenau**'s *Elements of Mars*, published in the *Memoirs of the Royal Astronomical Society*, Vol. XX, have also been discussed and applied; and **Le Verrier**'s secular variations of the elements are likewise adopted. The perturbations produced by Jupiter have been increased by $\frac{1}{60}$ of their value. The following are the corresponding corrected elements and annual variations for Washington, 1855.0:—

$$\begin{aligned} L &= 320^\circ\ 13'\ 33''.87 + 689101''.1527\ t \\ \pi &= 333\ 23\ 17.84 + 65.9990\ t \\ \Omega &= 48\ 25\ 55.29 + 27.6997\ t \\ i &= 1\ 51\ 2.20 - 0.02141\ t \\ e &= 19238''.75 + 0.18549\ t \\ n &= 689050''.8927 \\ a &= 1.5236915 \end{aligned}$$

The ephemeris of Jupiter is derived from manuscript tables constructed from **Bouvard**'s Tables, with such changes as were required to make them correspond more nearly to the formulæ.

The ephemeris of Saturn is derived from a provisional theory constructed by Mr. **George W. Hill**, and still unpublished.

The ephemerides of Uranus and Neptune are derived from Professor **Newcomb**'s Tables, published by the *Smithsonian Institution*.

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* *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1865, Appendix II.

† *Astronomical Observations made at the U. S. Naval Observatory, Washington*, 1875, Appendix II.

The semidiameters of the planets are computed from the following values:—

	Semidiameter.	Log Dist.	Authority.
Mercury	3″.34	0.00	Le Verrier, *Theory of Mercury.*
Venus	8.546 ± 0.086	0.00	Peirce, from the Washington Observations of 1845 and 1846, made with the Mural Circle.
Mars	2.842 ± 0.057	0.25	
Jupiter (polar)	18.78 ± 0.067	0.70	
Saturn (polar)	8.77 ± 0.039	0.95	
Uranus	1.68 ± 0.3	1.30	
Neptune	1.28	1.48	
Jupiter (equatorial)	20.00	0.70	
Saturn (equatorial)	9.38	0.95	

The elements of eclipses of the sun and occultations of stars by the moon are adapted to Bessel's method, using the special forms in Chauvenet's *Spherical and Practical Astronomy.* The adopted semidiameters are:—

Semidiameter of the sun at distance unity. . . .	959″.788
Ratio of radius of moon to radius of earth . . .	0.27227

The eclipses of Jupiter's satellites are computed from Todd's *Continuation of* Damoiseau's *Tables*, Washington, 1876. The occultations, transits, etc., are computed from Woolhouse's Tables, *British Nautical Almanac* for 1835, Table II of each satellite having been adapted to Damoiseau's Tables.

The elongations and conjunctions of the satellites of Saturn, except those of Titan and Hyperion, are computed from Hall's Tables, published in Washington observations of 1882-1883.

The apparent elements of the rings of Saturn are computed from Bessel's data, except those for the dusky ring.

The elongations of the satellites of Uranus, and of the satellite of Neptune are computed from the data of Professor Newcomb's *Uranian and Neptunian Systems*, Washington, 1875.

In compiling the positions of observatories, the latest available data have been used. The positions have been furnished, in many instances, through the courtesy of the directors of the Observatories, in response to a circular issued by the Superintendent of the American Ephemeris.

The reduction to geocentric latitude, and the logarithm of the radius of the earth, are derived from Bessel's elements of the terrestrial spheroid, as adopted in Table III of Chauvenet's *Spherical and Practical Astronomy*, Vol. II:—

$$\log e = 8.9122052$$

$$\varphi' - \varphi = -11' 30''.65 \sin 2\varphi + 1''.16 \sin 4\varphi$$

$$\log \rho = 9.9992747 + 0.0007271 \cos 2\varphi - 0.0000018 \cos 4\varphi$$

Table IV, for finding the latitude from an observed altitude of Polaris, is constructed for—

(1) An altitude of Polaris equal to 45°.

(2) A declination of Polaris equal to + 88° 44′.

The principal computations of the Ephemeris have been distributed in the following manner:—

The ephemeris of the Sun was computed by Mr. E. Davis; the Moon's longitude, latitude, semidiameter and horizontal parallax, by Professor Keith; the right ascension and declination, by Professor Van Vleck; the culminations, by Dr. J. Morrison; the lunar distances, by Mr. Bradford; Mercury and Venus, by Mr. E. P. Austin; Mars, Jupiter, Saturn, Uranus, and Neptune, by Mr. Roberdeau Buchanan; Jupiter's satellites, by Professor H. D. Todd; the satellites of Mars, Saturn, Uranus, and Neptune, by Dr. Morrison. The mean and apparent places of the fixed stars were prepared by Mr. Meier and Mr. Hedrick; the general constants for their reduction, by Mr. Buchanan; the occultations, by Mr. Auhagen; and the eclipses were computed and the charts projected by Mr. Buchanan.

CORRECTION REQUIRED, ON ACCOUNT OF SECOND DIFFERENCES OF THE MOON'S MOTION, IN FINDING THE GREENWICH TIME CORRESPONDING TO A CORRECTED LUNAR DISTANCE.

Approximate Interval.		Difference of the Proportional Logarithms in the Ephemeris.																									
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	0	0	0	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3
0 20	2 40	0	1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
0 30	2 30	0	1	1	2	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	7	8	8	8	9	9
0 40	2 20	0	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11
0 50	2 10	1	1	2	2	3	3	4	4	5	5	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13
1 0	2 0	1	1	2	2	3	3	4	4	5	6	6	7	7	8	8	9	9	10	10	11	12	12	13	13	14	14
1 10	1 50	1	1	2	2	3	4	4	5	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	15
1 20	1 40	1	1	2	3	3	4	4	5	6	6	7	7	8	9	9	10	10	11	12	12	13	14	14	15	15	16
1 30	1 30	1	1	2	3	3	4	4	5	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16

		Difference of the Proportional Logarithms in the Ephemeris.																							
		54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	7
0 20	2 40	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12
0 30	2 30	9	10	10	10	11	11	12	12	12	13	13	13	14	14	14	14	15	15	16	16	16	17	17	17
0 40	2 20	12	12	13	13	13	14	14	15	15	16	16	16	17	17	18	18	19	19	19	20	20	21	21	22
0 50	2 10	14	14	15	15	16	16	16	17	17	18	19	19	20	20	21	21	22	22	22	23	23	24	24	25
1 0	2 0	15	16	16	17	17	18	18	19	19	20	21	21	22	22	23	23	24	24	25	25	26	27	27	28
1 10	1 50	16	17	17	18	18	19	19	20	21	21	22	22	23	24	24	25	25	26	27	27	28	28	29	30
1 20	1 40	17	17	18	19	19	20	20	21	21	22	23	23	24	25	25	26	26	27	28	28	29	29	30	31
1 30	1 30	17	18	18	19	19	20	21	21	22	23	23	24	24	25	25	26	27	27	28	29	29	30	31	31

		Difference of the Proportional Logarithms in the Ephemeris.																		
		102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132	134	136	138
h m	h m	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
0 0	3 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0 10	2 50	7	7	7	7	7	7	7	8	8	8	8	8	8	8	8	9	9	9	9
0 20	2 40	13	13	13	13	14	14	14	14	15	15	15	15	15	16	16	16	16	17	17
0 30	2 30	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	24	24
0 40	2 20	22	22	23	23	24	24	25	25	25	26	26	27	27	28	28	28	29	29	30
0 50	2 10	26	26	26	27	27	28	29	29	29	30	30	31	31	32	32	33	33	34	34
1 0	2 0	28	29	29	30	30	31	31	32	33	33	34	34	35	35	36	37	37	38	38
1 10	1 50	30	31	31	32	32	33	34	34	35	35	36	37	37	38	38	39	40	40	41
1 20	1 40	31	32	33	33	34	34	35	35	36	37	38	38	39	39	40	41	41	42	42
1 30	1 30	32	32	33	34	34	35	35	36	36	37	38	39	39	40	40	41	42	42	43

The correction is to be added to the approximate Greenwich time when the proportional logarithms in the Ephemeris are decreasing, and subtracted when they are increasing.

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	$0^{h.}$		$1^{h.}$		$2^{h.}$		$3^{h.}$		$4^{h.}$		$5^{h.}$		$6^{h.}$		$7^{h.}$		For Seconds.	
m	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	s	s
0	0	0.000	0	9.830	0	19.659	0	29.489	0	39.318	0	49.148	0	58.977	1	8.807	0	0.000
1	0	0.164	0	9.993	0	19.823	0	29.653	0	39.482	0	49.312	0	59.141	1	8.971	1	0.003
2	0	0.328	0	10.157	0	19.987	0	29.816	0	39.646	0	49.475	0	59.305	1	9.135	2	0.005
3	0	0.491	0	10.321	0	20.151	0	29.980	0	39.810	0	49.639	0	59.469	1	9.298	3	0.008
4	0	0.655	0	10.485	0	20.314	0	30.144	0	39.974	0	49.803	0	59.633	1	9.462	4	0.011
5	0	0.819	0	10.649	0	20.478	0	30.308	0	40.137	0	49.967	0	59.796	1	9.626	5	0.014
6	0	0.983	0	10.813	0	20.642	0	30.472	0	40.301	0	50.131	0	59.960	1	9.790	6	0.016
7	0	1.147	0	10.976	0	20.806	0	30.635	0	40.465	0	50.295	1	0.124	1	9.954	7	0.019
8	0	1.311	0	11.140	0	20.970	0	30.799	0	40.629	0	50.458	1	0.288	1	10.118	8	0.022
9	0	1.474	0	11.304	0	21.134	0	30.963	0	40.793	0	50.622	1	0.452	1	10.281	9	0.025
10	0	1.638	0	11.468	0	21.297	0	31.127	0	40.956	0	50.786	1	0.616	1	10.445	10	0.027
11	0	1.802	0	11.632	0	21.461	0	31.291	0	41.120	0	50.950	1	0.779	1	10.609	11	0.030
12	0	1.966	0	11.795	0	21.625	0	31.455	0	41.284	0	51.114	1	0.943	1	10.773	12	0.033
13	0	2.130	0	11.959	0	21.789	0	31.618	0	41.448	0	51.278	1	1.107	1	10.937	13	0.035
14	0	2.294	0	12.123	0	21.953	0	31.782	0	41.612	0	51.441	1	1.271	1	11.100	14	0.038
15	0	2.457	0	12.287	0	22.117	0	31.946	0	41.776	0	51.605	1	1.435	1	11.264	15	0.041
16	0	2.621	0	12.451	0	22.280	0	32.110	0	41.939	0	51.769	1	1.599	1	11.428	16	0.044
17	0	2.785	0	12.615	0	22.444	0	32.274	0	42.103	0	51.933	1	1.762	1	11.592	17	0.046
18	0	2.949	0	12.778	0	22.608	0	32.438	0	42.267	0	52.097	1	1.926	1	11.756	18	0.049
19	0	3.113	0	12.942	0	22.772	0	32.601	0	42.431	0	52.260	1	2.090	1	11.920	19	0.052
20	0	3.277	0	13.106	0	22.936	0	32.765	0	42.595	0	52.424	1	2.254	1	12.083	20	0.055
21	0	3.440	0	13.270	0	23.099	0	32.929	0	42.759	0	52.588	1	2.418	1	12.247	21	0.057
22	0	3.604	0	13.434	0	23.263	0	33.093	0	42.922	0	52.752	1	2.582	1	12.411	22	0.060
23	0	3.768	0	13.598	0	23.427	0	33.257	0	43.086	0	52.916	1	2.745	1	12.575	23	0.063
24	0	3.932	0	13.761	0	23.591	0	33.420	0	43.250	0	53.080	1	2.909	1	12.739	24	0.066
25	0	4.096	0	13.925	0	23.755	0	33.584	0	43.414	0	53.243	1	3.073	1	12.903	25	0.068
26	0	4.259	0	14.089	0	23.919	0	33.748	0	43.578	0	53.407	1	3.237	1	13.066	26	0.071
27	0	4.423	0	14.253	0	24.082	0	33.912	0	43.742	0	53.571	1	3.401	1	13.230	27	0.074
28	0	4.587	0	14.417	0	24.246	0	34.076	0	43.905	0	53.735	1	3.564	1	13.394	28	0.076
29	0	4.751	0	14.581	0	24.410	0	34.240	0	44.069	0	53.899	1	3.728	1	13.558	29	0.079
30	0	4.915	0	14.744	0	24.574	0	34.403	0	44.233	0	54.063	1	3.892	1	13.722	30	0.082
31	0	5.079	0	14.908	0	24.738	0	34.567	0	44.397	0	54.226	1	4.056	1	13.886	31	0.085
32	0	5.242	0	15.072	0	24.902	0	34.731	0	44.561	0	54.390	1	4.220	1	14.049	32	0.087
33	0	5.406	0	15.236	0	25.065	0	34.895	0	44.724	0	54.554	1	4.384	1	14.213	33	0.090
34	0	5.570	0	15.400	0	25.229	0	35.059	0	44.888	0	54.718	1	4.547	1	14.377	34	0.093
35	0	5.734	0	15.563	0	25.393	0	35.223	0	45.052	0	54.882	1	4.711	1	14.541	35	0.096
36	0	5.898	0	15.727	0	25.557	0	35.386	0	45.216	0	55.046	1	4.875	1	14.705	36	0.098
37	0	6.062	0	15.891	0	25.721	0	35.550	0	45.380	0	55.209	1	5.039	1	14.868	37	0.101
38	0	6.225	0	16.055	0	25.885	0	35.714	0	45.544	0	55.373	1	5.203	1	15.032	38	0.104
39	0	6.389	0	16.219	0	26.048	0	35.878	0	45.707	0	55.537	1	5.367	1	15.196	39	0.106
40	0	6.553	0	16.383	0	26.212	0	36.042	0	45.871	0	55.701	1	5.530	1	15.360	40	0.109
41	0	6.717	0	16.546	0	26.376	0	36.206	0	46.035	0	55.865	1	5.694	1	15.524	41	0.112
42	0	6.881	0	16.710	0	26.540	0	36.369	0	46.199	0	56.028	1	5.858	1	15.688	42	0.115
43	0	7.045	0	16.874	0	26.704	0	36.533	0	46.363	0	56.192	1	6.022	1	15.851	43	0.117
44	0	7.208	0	17.038	0	26.867	0	36.697	0	46.527	0	56.356	1	6.186	1	16.015	44	0.120
45	0	7.372	0	17.202	0	27.031	0	36.861	0	46.690	0	56.520	1	6.350	1	16.179	45	0.123
46	0	7.536	0	17.366	0	27.195	0	37.025	0	46.854	0	56.684	1	6.513	1	16.343	46	0.126
47	0	7.700	0	17.529	0	27.359	0	37.188	0	47.018	0	56.848	1	6.677	1	16.507	47	0.128
48	0	7.864	0	17.693	0	27.523	0	37.352	0	47.182	0	57.011	1	6.841	1	16.671	48	0.131
49	0	8.027	0	17.857	0	27.687	0	37.516	0	47.346	0	57.175	1	7.005	1	16.834	49	0.134
50	0	8.191	0	18.021	0	27.850	0	37.680	0	47.510	0	57.339	1	7.169	1	16.998	50	0.137
51	0	8.355	0	18.185	0	28.014	0	37.844	0	47.673	0	57.503	1	7.332	1	17.162	51	0.139
52	0	8.519	0	18.349	0	28.178	0	38.008	0	47.837	0	57.667	1	7.496	1	17.326	52	0.142
53	0	8.683	0	18.512	0	28.342	0	38.171	0	48.001	0	57.831	1	7.660	1	17.490	53	0.145
54	0	8.847	0	18.676	0	28.506	0	38.335	0	48.165	0	57.994	1	7.824	1	17.654	54	0.147
55	0	9.010	0	18.840	0	28.670	0	38.499	0	48.329	0	58.158	1	7.988	1	17.817	55	0.150
56	0	9.174	0	19.004	0	28.833	0	38.663	0	48.492	0	58.322	1	8.152	1	17.981	56	0.153
57	0	9.338	0	19.168	0	28.997	0	38.827	0	48.656	0	58.486	1	8.315	1	18.145	57	0.156
58	0	9.502	0	19.331	0	29.161	0	38.991	0	48.820	0	58.650	1	8.479	1	18.309	58	0.158
59	0	9.666	0	19.495	0	29.325	0	39.154	0	48.984	0	58.814	1	8.643	1	18.473	59	0.161
Sidereal.	$0^{h.}$		$1^{h.}$		$2^{h.}$		$3^{h.}$		$4^{h.}$		$5^{h.}$		$6^{h.}$		$7^{h.}$		For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Side-real.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.636	1 28.466	1 38.296	1 48.125	1 57.955	2 7.784	2 17.614	2 27.443	0	0.000
1	1 18.800	1 28.630	1 38.459	1 48.289	1 58.119	2 7.948	2 17.778	2 27.607	1	0.003
2	1 18.964	1 28.794	1 38.623	1 48.453	1 58.282	2 8.112	2 17.941	2 27.771	2	0.005
3	1 19.128	1 28.958	1 38.787	1 48.617	1 58.446	2 8.276	2 18.105	2 27.935	3	0.008
4	1 19.292	1 29.121	1 38.951	1 48.780	1 58.610	2 8.440	2 18.269	2 28.099	4	0.011
5	1 19.456	1 29.285	1 39.115	1 48.944	1 58.774	2 8.603	2 18.433	2 28.263	5	0.014
6	1 19.619	1 29.449	1 39.279	1 49.108	1 58.938	2 8.767	2 18.597	2 28.426	6	0.016
7	1 19.783	1 29.613	1 39.442	1 49.272	1 59.101	2 8.931	2 18.761	2 28.590	7	0.019
8	1 19.947	1 29.777	1 39.606	1 49.436	1 59.265	2 9.095	2 18.924	2 28.754	8	0.022
9	1 20.111	1 29.940	1 39.770	1 49.600	1 59.429	2 9.259	2 19.088	2 28.918	9	0.025
10	1 20.275	1 30.104	1 39.934	1 49.763	1 59.593	2 9.423	2 19.252	2 29.082	10	0.027
11	1 20.439	1 30.268	1 40.098	1 49.927	1 59.757	2 9.586	2 19.416	2 29.245	11	0.030
12	1 20.602	1 30.432	1 40.261	1 50.091	1 59.921	2 9.750	2 19.580	2 29.409	12	0.033
13	1 20.766	1 30.596	1 40.425	1 50.255	2 0.084	2 9.914	2 19.744	2 29.573	13	0.035
14	1 20.930	1 30.760	1 40.589	1 50.419	2 0.248	2 10.078	2 19.907	2 29.737	14	0.038
15	1 21.094	1 30.923	1 40.753	1 50.583	2 0.412	2 10.242	2 20.071	2 29.901	15	0.041
16	1 21.258	1 31.087	1 40.917	1 50.746	2 0.576	2 10.405	2 20.235	2 30.065	16	0.044
17	1 21.422	1 31.251	1 41.081	1 50.910	2 0.740	2 10.569	2 20.399	2 30.228	17	0.046
18	1 21.585	1 31.415	1 41.244	1 51.074	2 0.904	2 10.733	2 20.563	2 30.392	18	0.049
19	1 21.749	1 31.579	1 41.408	1 51.238	2 1.067	2 10.897	2 20.727	2 30.556	19	0.052
20	1 21.913	1 31.743	1 41.572	1 51.402	2 1.231	2 11.061	2 20.890	2 30.720	20	0.055
21	1 22.077	1 31.906	1 41.736	1 51.565	2 1.395	2 11.225	2 21.054	2 30.884	21	0.057
22	1 22.241	1 32.070	1 41.900	1 51.729	2 1.559	2 11.388	2 21.218	2 31.048	22	0.060
23	1 22.404	1 32.234	1 42.064	1 51.893	2 1.723	2 11.552	2 21.382	2 31.211	23	0.063
24	1 22.568	1 32.398	1 42.227	1 52.057	2 1.887	2 11.716	2 21.546	2 31.375	24	0.066
25	1 22.732	1 32.562	1 42.391	1 52.221	2 2.050	2 11.880	2 21.709	2 31.539	25	0.068
26	1 22.896	1 32.726	1 42.555	1 52.385	2 2.214	2 12.044	2 21.873	2 31.703	26	0.071
27	1 23.060	1 32.889	1 42.719	1 52.548	2 2.378	2 12.208	2 22.037	2 31.867	27	0.074
28	1 23.224	1 33.053	1 42.883	1 52.712	2 2.542	2 12.371	2 22.201	2 32.031	28	0.076
29	1 23.387	1 33.217	1 43.047	1 52.876	2 2.706	2 12.535	2 22.365	2 32.194	29	0.079
30	1 23.551	1 33.381	1 43.210	1 53.040	2 2.869	2 12.699	2 22.529	2 32.358	30	0.082
31	1 23.715	1 33.545	1 43.374	1 53.204	2 3.033	2 12.863	2 22.692	2 32.522	31	0.085
32	1 23.879	1 33.708	1 43.538	1 53.368	2 3.197	2 13.027	2 22.856	2 32.686	32	0.087
33	1 24.043	1 33.872	1 43.702	1 53.531	2 3.361	2 13.191	2 23.020	2 32.850	33	0.090
34	1 24.207	1 34.036	1 43.866	1 53.695	2 3.525	2 13.354	2 23.184	2 33.013	34	0.093
35	1 24.370	1 34.200	1 44.029	1 53.859	2 3.689	2 13.518	2 23.348	2 33.177	35	0.096
36	1 24.534	1 34.364	1 44.193	1 54.023	2 3.852	2 13.682	2 23.512	2 33.341	36	0.098
37	1 24.698	1 34.528	1 44.357	1 54.187	2 4.016	2 13.846	2 23.675	2 33.505	37	0.101
38	1 24.862	1 34.691	1 44.521	1 54.351	2 4.180	2 14.010	2 23.839	2 33.669	38	0.104
39	1 25.026	1 34.855	1 44.685	1 54.514	2 4.344	2 14.173	2 24.003	2 33.833	39	0.106
40	1 25.190	1 35.019	1 44.849	1 54.678	2 4.508	2 14.337	2 24.167	2 33.996	40	0.109
41	1 25.353	1 35.183	1 45.012	1 54.842	2 4.672	2 14.501	2 24.331	2 34.160	41	0.112
42	1 25.517	1 35.347	1 45.176	1 55.006	2 4.835	2 14.665	2 24.495	2 34.324	42	0.115
43	1 25.681	1 35.511	1 45.340	1 55.170	2 4.999	2 14.829	2 24.658	2 34.488	43	0.117
44	1 25.845	1 35.674	1 45.504	1 55.333	2 5.163	2 14.993	2 24.822	2 34.652	44	0.120
45	1 26.009	1 35.838	1 45.668	1 55.497	2 5.327	2 15.156	2 24.986	2 34.816	45	0.123
46	1 26.172	1 36.002	1 45.832	1 55.661	2 5.491	2 15.320	2 25.150	2 34.979	46	0.126
47	1 26.336	1 36.166	1 45.995	1 55.825	2 5.655	2 15.484	2 25.314	2 35.143	47	0.128
48	1 26.500	1 36.330	1 46.159	1 55.989	2 5.818	2 15.948	2 25.477	2 35.307	48	0.131
49	1 26.664	1 36.493	1 46.323	1 56.153	2 5.982	2 15.812	2 25.641	2 35.471	49	0.134
50	1 26.828	1 36.657	1 46.487	1 56.316	2 6.146	2 15.976	2 25.805	2 35.635	50	0.137
51	1 26.992	1 36.821	1 46.651	1 56.480	2 6.310	2 16.139	2 25.969	2 35.798	51	0.139
52	1 27.155	1 36.985	1 46.815	1 56.644	2 6.474	2 16.303	2 26.133	2 35.962	52	0.142
53	1 27.319	1 37.149	1 46.978	1 56.808	2 6.637	2 16.467	2 26.297	2 36.126	53	0.145
54	1 27.483	1 37.313	1 47.142	1 56.972	2 6.801	2 16.631	2 26.460	2 36.290	54	0.147
55	1 27.647	1 37.476	1 47.306	1 57.136	2 6.965	2 16.795	2 26.624	2 36.454	55	0.150
56	1 27.811	1 37.640	1 47.470	1 57.299	2 7.129	2 16.959	2 26.788	2 36.618	56	0.153
57	1 27.975	1 37.804	1 47.634	1 57.463	2 7.293	2 17.122	2 26.952	2 36.781	57	0.156
58	1 28.138	1 37.968	1 47.797	1 57.627	2 7.457	2 17.286	2 27.116	2 36.945	58	0.158
59	1 28.302	1 38.132	1 47.961	1 57.791	2 7.620	2 17.450	2 27.280	2 37.109	59	0.161
Side-real.	$8^{h.}$	$9^{h.}$	$10^{h.}$	$11^{h.}$	$12^{h.}$	$13^{h.}$	$14^{h.}$	$15^{h.}$	For Seconds.	

TO BE SUBTRACTED FROM A SIDEREAL TIME INTERVAL.

Sidereal.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.273	2 47.102	2 56.932	3 6.762	3 16.591	3 26.421	3 36.250	3 46.080	0	0.000
1	2 37.437	2 47.266	2 57.096	3 6.925	3 16.755	3 26.585	3 36.414	3 46.244	1	0.003
2	2 37.601	2 47.430	2 57.260	3 7.089	3 16.919	3 26.748	3 36.578	3 46.407	2	0.005
3	2 37.764	2 47.594	2 57.424	3 7.253	3 17.083	3 26.912	3 36.742	3 46.571	3	0.008
4	2 37.928	2 47.758	2 57.587	3 7.417	3 17.246	3 27.076	3 36.906	3 46.735	4	0.011
5	2 38.092	2 47.922	2 57.751	3 7.581	3 17.410	3 27.240	3 37.069	3 46.899	5	0.014
6	2 38.256	2 48.085	2 57.915	3 7.745	3 17.574	3 27.404	3 37.233	3 47.063	6	0.016
7	2 38.420	2 48.249	2 58.079	3 7.908	3 17.738	3 27.568	3 37.397	3 47.227	7	0.019
8	2 38.584	2 48.413	2 58.243	3 8.072	3 17.902	3 27.731	3 37.561	3 47.390	8	0.022
9	2 38.747	2 48.577	2 58.406	3 8.236	3 18.066	3 27.895	3 37.725	3 47.554	9	0.025
10	2 38.911	2 48.741	2 58.570	3 8.400	3 18.229	3 28.059	3 37.889	3 47.718	10	0.027
11	2 39.075	2 48.905	2 58.734	3 8.564	3 18.393	3 28.223	3 38.052	3 47.882	11	0.030
12	2 39.239	2 49.068	2 58.898	3 8.728	3 18.557	3 28.387	3 38.216	3 48.046	12	0.033
13	2 39.403	2 49.232	2 59.062	3 8.891	3 18.721	3 28.550	3 38.380	3 48.210	13	0.035
14	2 39.566	2 49.396	2 59.226	3 9.055	3 18.885	3 28.714	3 38.544	3 48.373	14	0.038
15	2 39.730	2 49.560	2 59.389	3 9.219	3 19.049	3 28.878	3 38.708	3 48.537	15	0.041
16	2 39.894	2 49.724	2 59.553	3 9.383	3 19.212	3 29.042	3 38.871	3 48.701	16	0.044
17	2 40.058	2 49.888	2 59.717	3 9.547	3 19.376	3 29.206	3 39.035	3 48.865	17	0.046
18	2 40.222	2 50.051	2 59.881	3 9.710	3 19.540	3 29.370	3 39.199	3 49.029	18	0.049
19	2 40.386	2 50.215	3 0.045	3 9.874	3 19.704	3 29.533	3 39.363	3 49.193	19	0.052
20	2 40.549	2 50.379	3 0.209	3 10.038	3 19.868	3 29.697	3 39.527	3 49.356	20	0.055
21	2 40.713	2 50.543	3 0.372	3 10.202	3 20.032	3 29.861	3 39.691	3 49.520	21	0.057
22	2 40.877	2 50.707	3 0.536	3 10.366	3 20.195	3 30.025	3 39.854	3 49.684	22	0.060
23	2 41.041	2 50.870	3 0.700	3 10.530	3 20.359	3 30.189	3 40.018	3 49.848	23	0.063
24	2 41.205	2 51.034	3 0.864	3 10.693	3 20.523	3 30.353	3 40.182	3 50.012	24	0.066
25	2 41.369	2 51.198	3 1.028	3 10.857	3 20.687	3 30.516	3 40.346	3 50.175	25	0.068
26	2 41.532	2 51.362	3 1.192	3 11.021	3 20.851	3 30.680	3 40.510	3 50.339	26	0.071
27	2 41.696	2 51.526	3 1.355	3 11.185	3 21.014	3 30.844	3 40.674	3 50.503	27	0.074
28	2 41.860	2 51.690	3 1.519	3 11.349	3 21.178	3 31.008	3 40.837	3 50.667	28	0.076
29	2 42.024	2 51.853	3 1.683	3 11.513	3 21.342	3 31.172	3 41.001	3 50.831	29	0.079
30	2 42.188	2 52.017	3 1.847	3 11.676	3 21.506	3 31.336	3 41.165	3 50.995	30	0.082
31	2 42.352	2 52.181	3 2.011	3 11.840	3 21.670	3 31.499	3 41.329	3 51.158	31	0.085
32	2 42.515	2 52.345	3 2.174	3 12.004	3 21.834	3 31.663	3 41.493	3 51.322	32	0.087
33	2 42.679	2 52.509	3 2.338	3 12.168	3 21.997	3 31.827	3 41.657	3 51.486	33	0.090
34	2 42.843	2 52.673	3 2.502	3 12.332	3 22.161	3 31.991	3 41.820	3 51.650	34	0.093
35	2 43.007	2 52.836	3 2.666	3 12.496	3 22.325	3 32.155	3 41.984	3 51.814	35	0.096
36	2 43.171	2 53.000	3 2.830	3 12.659	3 22.489	3 32.318	3 42.148	3 51.978	36	0.098
37	2 43.334	2 53.164	3 2.994	3 12.823	3 22.653	3 32.482	3 42.312	3 52.141	37	0.101
38	2 43.498	2 53.328	3 3.157	3 12.987	3 22.817	3 32.646	3 42.476	3 52.305	38	0.104
39	2 43.662	2 53.492	3 3.321	3 13.151	3 22.980	3 32.810	3 42.639	3 52.469	39	0.106
40	2 43.826	2 53.656	3 3.485	3 13.315	3 23.144	3 32.974	3 42.803	3 52.633	40	0.109
41	2 43.990	2 53.819	3 3.649	3 13.478	3 23.308	3 33.138	3 42.967	3 52.797	41	0.112
42	2 44.154	2 53.983	3 3.813	3 13.642	3 23.472	3 33.301	3 43.131	3 52.961	42	0.115
43	2 44.317	2 54.147	3 3.977	3 13.806	3 23.636	3 33.465	3 43.295	3 53.124	43	0.117
44	2 44.481	2 54.311	3 4.140	3 13.970	3 23.800	3 33.629	3 43.459	3 53.288	44	0.120
45	2 44.645	2 54.475	3 4.304	3 14.134	3 23.963	3 33.793	3 43.622	3 53.452	45	0.123
46	2 44.809	2 54.638	3 4.468	3 14.298	3 24.127	3 33.957	3 43.786	3 53.616	46	0.126
47	2 44.973	2 54.802	3 4.632	3 14.461	3 24.291	3 34.121	3 43.950	3 53.780	47	0.128
48	2 45.137	2 54.966	3 4.796	3 14.625	3 24.455	3 34.284	3 44.114	3 53.943	48	0.131
49	2 45.300	2 55.130	3 4.960	3 14.789	3 24.619	3 34.448	3 44.278	3 54.107	49	0.134
50	2 45.464	2 55.294	3 5.123	3 14.953	3 24.782	3 34.612	3 44.442	3 54.271	50	0.137
51	2 45.628	2 55.458	3 5.287	3 15.117	3 24.946	3 34.776	3 44.605	3 54.435	51	0.139
52	2 45.792	2 55.621	3 5.451	3 15.281	3 25.110	3 34.940	3 44.769	3 54.599	52	0.142
53	2 45.956	2 55.785	3 5.615	3 15.444	3 25.274	3 35.104	3 44.933	3 54.763	53	0.145
54	2 46.120	2 55.949	3 5.779	3 15.608	3 25.438	3 35.267	3 45.097	3 54.926	54	0.147
55	2 46.283	2 56.113	3 5.942	3 15.772	3 25.602	3 35.431	3 45.261	3 55.090	55	0.150
56	2 46.447	2 56.277	3 6.106	3 15.936	3 25.765	3 35.595	3 45.425	3 55.254	56	0.153
57	2 46.611	2 56.441	3 6.270	3 16.100	3 25.929	3 35.759	3 45.588	3 55.418	57	0.156
58	2 46.775	2 56.604	3 6.434	3 16.264	3 26.093	3 35.923	3 45.752	3 55.582	58	0.158
59	2 46.939	2 56 768	3 6.598	3 16.427	3 26.257	3 36.086	3 45.916	3 55.746	59	0.161
Sidereal.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$0^{\text{h.}}$	$1^{\text{h.}}$	$2^{\text{h.}}$	$3^{\text{h.}}$	$4^{\text{h.}}$	$5^{\text{h.}}$	$6^{\text{h.}}$	$7^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	0 0.000	0 9.856	0 19.713	0 29.569	0 39.426	0 49.282	0 59.139	1 8.995	0	0.000
1	0 0.164	0 10.021	0 19.877	0 29.734	0 39.590	0 49.447	0 59.303	1 9.160	1	0.003
2	0 0.329	0 10.185	0 20.041	0 29.898	0 39.754	0 49.611	0 59.467	1 9.324	2	0.005
3	0 0.493	0 10.349	0 20.206	0 30.062	0 39.919	0 49.775	0 59.632	1 9.488	3	0.008
4	0 0.657	0 10.514	0 20.370	0 30.227	0 40.083	0 49.939	0 59.796	1 9.652	4	0.011
5	0 0.821	0 10.678	0 20.534	0 30.391	0 40.247	0 50.104	0 59.960	1 9.817	5	0.014
6	0 0.986	0 10.842	0 20.699	0 30.555	0 40.412	0 50.268	1 0.124	1 9.981	6	0.016
7	0 1.150	0 11.006	0 20.863	0 30.719	0 40.576	0 50.432	1 0.289	1 10.145	7	0.019
8	0 1.314	0 11.171	0 21.027	0 30.884	0 40.740	0 50.597	1 0.453	1 10.310	8	0.022
9	0 1.478	0 11.335	0 21.191	0 31.048	0 40.904	0 50.761	1 0.617	1 10.474	9	0.025
10	0 1.643	0 11.499	0 21.356	0 31.212	0 41.069	0 50.925	1 0.782	1 10.638	10	0.027
11	0 1.807	0 11.663	0 21.520	0 31.376	0 41.233	0 51.089	1 0.946	1 10.802	11	0.030
12	0 1.971	0 11.828	0 21.684	0 31.541	0 41.397	0 51.254	1 1.110	1 10.967	12	0.033
13	0 2.136	0 11.992	0 21.849	0 31.705	0 41.561	0 51.418	1 1.274	1 11.131	13	0.036
14	0 2.300	0 12.156	0 22.013	0 31.869	0 41.726	0 51.582	1 1.439	1 11.295	14	0.038
15	0 2.464	0 12.321	0 22.177	0 32.034	0 41.890	0 51.746	1 1.603	1 11.459	15	0.041
16	0 2.628	0 12.485	0 22.341	0 32.198	0 42.054	0 51.911	1 1.767	1 11.624	16	0.044
17	0 2.793	0 12.649	0 22.506	0 32.362	0 42.219	0 52.075	1 1.932	1 11.788	17	0.047
18	0 2.957	0 12.813	0 22.670	0 32.526	0 42.383	0 52.239	1 2.096	1 11.952	18	0.049
19	0 3.121	0 12.978	0 22.834	0 32.691	0 42.547	0 52.404	1 2.260	1 12.117	19	0.052
20	0 3.285	0 13.142	0 22.998	0 32.855	0 42.711	0 52.568	1 2.424	1 12.281	20	0.055
21	0 3.450	0 13.306	0 23.163	0 33.019	0 42.876	0 52.732	1 2.589	1 12.445	21	0.057
22	0 3.614	0 13.471	0 23.327	0 33.183	0 43.040	0 52.896	1 2.753	1 12.609	22	0.060
23	0 3.778	0 13.635	0 23.491	0 33.348	0 43.204	0 53.061	1 2.917	1 12.774	23	0.063
24	0 3.943	0 13.799	0 23.656	0 33.512	0 43.368	0 53.225	1 3.081	1 12.938	24	0.066
25	0 4.107	0 13.963	0 23.820	0 33.676	0 43.533	0 53.389	1 3.246	1 13.102	25	0.068
26	0 4.271	0 14.128	0 23.984	0 33.841	0 43.697	0 53.554	1 3.410	1 13.266	26	0.071
27	0 4.435	0 14.292	0 24.148	0 34.005	0 43.861	0 53.718	1 3.574	1 13.431	27	0.074
28	0 4.600	0 14.456	0 24.313	0 34.169	0 44.026	0 53.882	1 3.739	1 13.595	28	0.077
29	0 4.764	0 14.620	0 24.477	0 34.333	0 44.190	0 54.046	1 3.903	1 13.759	29	0.079
30	0 4.928	0 14.785	0 24.641	0 34.498	0 44.354	0 54.211	1 4.067	1 13.924	30	0.082
31	0 5.093	0 14.949	0 24.805	0 34.662	0 44.518	0 54.375	1 4.231	1 14.088	31	0.085
32	0 5.257	0 15.113	0 24.970	0 34.826	0 44.683	0 54.539	1 4.396	1 14.252	32	0.088
33	0 5.421	0 15.278	0 25.134	0 34.990	0 44.847	0 54.703	1 4.560	1 14.416	33	0.090
34	0 5.585	0 15.442	0 25.298	0 35.155	0 45.011	0 54.868	1 4.724	1 14.581	34	0.093
35	0 5.750	0 15.606	0 25.463	0 35.319	0 45.176	0 55.032	1 4.888	1 14.745	35	0.096
36	0 5.914	0 15.770	0 25.627	0 35.483	0 45.340	0 55.196	1 5.053	1 14.909	36	0.099
37	0 6.078	0 15.935	0 25.791	0 35.648	0 45.504	0 55.361	1 5.217	1 15.073	37	0.101
38	0 6.242	0 16.099	0 25.955	0 35.812	0 45.668	0 55.525	1 5.381	1 15.238	38	0.104
39	0 6.407	0 16.263	0 26.120	0 35.976	0 45.833	0 55.689	1 5.546	1 15.402	39	0.107
40	0 6.571	0 16.427	0 26.284	0 36.140	0 45.997	0 55.853	1 5.710	1 15.566	40	0.110
41	0 6.735	0 16.592	0 26.448	0 36.305	0 46.161	0 56.018	1 5.874	1 15.731	41	0.112
42	0 6.900	0 16.756	0 26.612	0 36.469	0 46.325	0 56.182	1 6.038	1 15.895	42	0.115
43	0 7.064	0 16.920	0 26.777	0 36.633	0 46.490	0 56.346	1 6.203	1 16.059	43	0.118
44	0 7.228	0 17.085	0 26.941	0 36.798	0 46.654	0 56.510	1 6.367	1 16.223	44	0.120
45	0 7.392	0 17.249	0 27.105	0 36.962	0 46.818	0 56.675	1 6.531	1 16.388	45	0.123
46	0 7.557	0 17.413	0 27.270	0 37.126	0 46.983	0 56.839	1 6.695	1 16.552	46	0.126
47	0 7.721	0 17.577	0 27.434	0 37.290	0 47.147	0 57.003	1 6.860	1 16.716	47	0.129
48	0 7.885	0 17.742	0 27.598	0 37.455	0 47.311	0 57.168	1 7.024	1 16.881	48	0.131
49	0 8.049	0 17.906	0 27.762	0 37.619	0 47.475	0 57.332	1 7.188	1 17.045	49	0.134
50	0 8.214	0 18.070	0 27.927	0 37.783	0 47.640	0 57.496	1 7.353	1 17.209	50	0.137
51	0 8.378	0 18.234	0 28.091	0 37.947	0 47.804	0 57.660	1 7.517	1 17.373	51	0.140
52	0 8.542	0 18.399	0 28.255	0 38.112	0 47.968	0 57.825	1 7.681	1 17.538	52	0.142
53	0 8.707	0 18.563	0 28.420	0 38.276	0 48.132	0 57.989	1 7.845	1 17.702	53	0.145
54	0 8.871	0 18.727	0 28.584	0 38.440	0 48.297	0 58.153	1 8.010	1 17.866	54	0.148
55	0 9.035	0 18.892	0 28.748	0 38.605	0 48.461	0 58.317	1 8.174	1 18.030	55	0.151
56	0 9.199	0 19.056	0 28.912	0 38.769	0 48.625	0 58.482	1 8.338	1 18.195	56	0.153
57	0 9.364	0 19.220	0 29.077	0 38.933	0 48.790	0 58.646	1 8.502	1 18.359	57	0.156
58	0 9.528	0 19.384	0 29.241	0 39.097	0 48.954	0 58.810	1 8.667	1 18.523	58	0.159
59	0 9.692	0 19.549	0 29.405	0 39.262	0 49.118	0 58.975	1 8.831	1 18.688	59	0.162
Mean Solar.	$0^{\text{h.}}$	$1^{\text{h.}}$	$2^{\text{h.}}$	$3^{\text{h.}}$	$4^{\text{h.}}$	$5^{\text{h.}}$	$6^{\text{h.}}$	$7^{\text{h.}}$	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$8^{\text{h.}}$	$9^{\text{h.}}$	$10^{\text{h.}}$	$11^{\text{h.}}$	$12^{\text{h.}}$	$13^{\text{h.}}$	$14^{\text{h.}}$	$15^{\text{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	1 18.852	1 28.708	1 38.565	1 48.421	1 58.278	2 8.134	2 17.991	2 27.847	0	0.000
1	1 19.016	1 28.873	1 38.729	1 48.585	1 58.442	2 8.298	2 18.155	2 28.011	1	0.003
2	1 19.180	1 29.037	1 38.893	1 48.750	1 58.606	2 8.463	2 18.319	2 28.176	2	0.005
3	1 19.345	1 29.201	1 39.058	1 48.914	1 58.771	2 8.627	2 18.483	2 28.340	3	0.008
4	1 19.509	1 29.365	1 39.222	1 49.078	1 58.935	2 8.791	2 18.648	2 28.504	4	0.011
5	1 19.673	1 29.530	1 39.386	1 49.243	1 59.099	2 8.956	2 18.812	2 28.668	5	0.014
6	1 19.837	1 29.694	1 39.550	1 49.407	1 59.263	2 9.120	2 18.976	2 28.833	6	0.016
7	1 20.002	1 29.858	1 39.715	1 49.571	1 59.428	2 9.284	2 19.141	2 28.997	7	0.019
8	1 20.166	1 30.022	1 39.879	1 49.735	1 59.592	2 9.448	2 19.305	2 29.161	8	0.022
9	1 20.330	1 30.187	1 40.043	1 49.900	1 59.756	2 9.613	2 19.469	2 29.326	9	0.025
10	1 20.495	1 30.351	1 40.207	1 50.064	1 59.920	2 9.777	2 19.633	2 29.490	10	0.027
11	1 20.659	1 30.515	1 40.372	1 50.228	2 0.085	2 9.941	2 19.798	2 29.654	11	0.030
12	1 20.823	1 30.680	1 40.536	1 50.393	2 0.249	2 10.105	2 19.962	2 29.818	12	0.033
13	1 20.987	1 30.844	1 40.700	1 50.557	2 0.413	2 10.270	2 20.126	2 29.983	13	0.036
14	1 21.152	1 31.008	1 40.865	1 50.721	2 0.578	2 10.434	2 20.290	2 30.147	14	0.038
15	1 21.316	1 31.172	1 41.029	1 50.885	2 0.742	2 10.598	2 20.455	2 30.311	15	0.041
16	1 21.480	1 31.337	1 41.193	1 51.050	2 0.906	2 10.763	2 20.619	2 30.476	16	0.044
17	1 21.644	1 31.501	1 41.357	1 51.214	2 1.070	2 10.927	2 20.783	2 30.640	17	0.047
18	1 21.809	1 31.665	1 41.522	1 51.378	2 1.235	2 11.091	2 20.948	2 30.804	18	0.049
19	1 21.973	1 31.829	1 41.686	1 51.542	2 1.399	2 11.255	2 21.112	2 30.968	19	0.052
20	1 22.137	1 31.994	1 41.850	1 51.707	2 1.563	2 11.420	2 21.276	2 31.133	20	0.055
21	1 22.302	1 32.158	1 42.015	1 51.871	2 1.727	2 11.584	2 21.440	2 31.297	21	0.057
22	1 22.466	1 32.322	1 42.179	1 52.035	2 1.892	2 11.748	2 21.605	2 31.461	22	0.060
23	1 22.630	1 32.487	1 42.343	1 52.200	2 2.056	2 11.912	2 21.769	2 31.625	23	0.063
24	1 22.794	1 32.651	1 42.507	1 52.364	2 2.220	2 12.077	2 21.933	2 31.790	24	0.066
25	1 22.959	1 32.815	1 42.672	1 52.528	2 2.385	2 12.241	2 22.098	2 31.954	25	0.068
26	1 23.123	1 32.979	1 42.836	1 52.692	2 2.549	2 12.405	2 22.262	2 32.118	26	0.071
27	1 23.287	1 33.144	1 43.000	1 52.857	2 2.713	2 12.570	2 22.426	2 32.283	27	0.074
28	1 23.451	1 33.308	1 43.164	1 53.021	2 2.877	2 12.734	2 22.590	2 32.447	28	0.077
29	1 23.616	1 33.472	1 43.329	1 53.185	2 3.042	2 12.898	2 22.755	2 32.611	29	0.079
30	1 23.780	1 33.637	1 43.493	1 53.349	2 3.206	2 13.062	2 22.919	2 32.775	30	0.082
31	1 23.944	1 33.801	1 43.657	1 53.514	2 3.370	2 13.227	2 23.083	2 32.940	31	0.085
32	1 24.109	1 33.965	1 43.822	1 53.678	2 3.534	2 13.391	2 23.247	2 33.104	32	0.088
33	1 24.273	1 34.129	1 43.986	1 53.842	2 3.699	2 13.555	2 23.412	2 33.268	33	0.090
34	1 24.437	1 34.294	1 44.150	1 54.007	2 3.863	2 13.720	2 23.576	2 33.432	34	0.093
35	1 24.601	1 34.458	1 44.314	1 54.171	2 4.027	2 13.884	2 23.740	2 33.597	35	0.096
36	1 24.766	1 34.622	1 44.479	1 54.335	2 4.192	2 14.048	2 23.905	2 33.761	36	0.099
37	1 24.930	1 34.786	1 44.643	1 54.499	2 4.356	2 14.212	2 24.069	2 33.925	37	0.101
38	1 25.094	1 34.951	1 44.807	1 54.664	2 4.520	2 14.377	2 24.233	2 34.090	38	0.104
39	1 25.259	1 35.115	1 44.971	1 54.828	2 4.684	2 14.541	2 24.397	2 34.254	39	0.107
40	1 25.423	1 35.279	1 45.136	1 54.992	2 4.849	2 14.705	2 24.562	2 34.418	40	0.110
41	1 25.587	1 35.444	1 45.300	1 55.156	2 5.013	2 14.869	2 24.726	2 34.582	41	0.112
42	1 25.751	1 35.608	1 45.464	1 55.321	2 5.177	2 15.034	2 24.890	2 34.747	42	0.115
43	1 25.916	1 35.772	1 45.629	1 55.485	2 5.342	2 15.198	2 25.054	2 34.911	43	0.118
44	1 26.080	1 35.936	1 45.793	1 55.649	2 5.506	2 15.362	2 25.219	2 35.075	44	0.120
45	1 26.244	1 36.101	1 45.957	1 55.814	2 5.670	2 15.527	2 25.383	2 35.239	45	0.123
46	1 26.408	1 36.265	1 46.121	1 55.978	2 5.834	2 15.691	2 25.547	2 35.404	46	0.126
47	1 26.573	1 36.429	1 46.286	1 56.142	2 5.999	2 15.855	2 25.712	2 35.568	47	0.129
48	1 26.737	1 36.593	1 46.450	1 56.306	2 6.163	2 16.019	2 25.876	2 35.732	48	0.131
49	1 26.901	1 36.758	1 46.614	1 56.471	2 6.327	2 16.184	2 26.040	2 35.897	49	0.134
50	1 27.066	1 36.922	1 46.778	1 56.635	2 6.491	2 16.348	2 26.204	2 36.061	50	0.137
51	1 27.230	1 37.086	1 46.943	1 56.799	2 6.656	2 16.512	2 26.369	2 36.225	51	0.140
52	1 27.394	1 37.251	1 47.107	1 56.964	2 6.820	2 16.676	2 26.533	2 36.389	52	0.142
53	1 27.558	1 37.415	1 47.271	1 57.128	2 6.984	2 16.841	2 26.697	2 36.554	53	0.145
54	1 27.723	1 37.579	1 47.436	1 57.292	2 7.149	2 17.005	2 26.861	2 36.718	54	0.148
55	1 27.887	1 37.743	1 47.600	1 57.456	2 7.313	2 17.169	2 27.026	2 36.882	55	0.151
56	1 28.051	1 37.908	1 47.764	1 57.621	2 7.477	2 17.334	2 27.190	2 37.047	56	0.153
57	1 28.215	1 38.072	1 47.928	1 57.785	2 7.641	2 17.498	2 27.354	2 37.211	57	0.156
58	1 28.380	1 38.236	1 48.093	1 57.949	2 7.806	2 17.662	2 27.519	2 37.375	58	0.159
59	1 28.544	1 38.400	1 48.257	1 58.113	2 7.970	2 17.826	2 27.683	2 37.539	59	0.162
Mean Solar.	$8^{\text{h.}}$	$9^{\text{h.}}$	$10^{\text{h.}}$	$11^{\text{h.}}$	$12^{\text{h.}}$	$13^{\text{h.}}$	$14^{\text{h.}}$	$15^{\text{h.}}$	For Seconds.	

TO BE ADDED TO A MEAN TIME INTERVAL.

Mean Solar.	$16^{\mathrm{h.}}$	$17^{\mathrm{h.}}$	$18^{\mathrm{h.}}$	$19^{\mathrm{h.}}$	$20^{\mathrm{h.}}$	$21^{\mathrm{h.}}$	$22^{\mathrm{h.}}$	$23^{\mathrm{h.}}$	For Seconds.	
m	m s	m s	m s	m s	m s	m s	m s	m s	s	s
0	2 37.704	2 47.560	2 57.417	3 7.273	3 17.129	3 26.986	3 36.842	3 46.699	0	0.000
1	2 37.868	2 47.724	2 57.581	3 7.437	3 17.294	3 27.150	3 37.007	3 46.863	1	0.003
2	2 38.032	2 47.889	2 57.745	3 7.602	3 17.458	3 27.315	3 37.171	3 47.027	2	0.005
3	2 38.196	2 48.053	2 57.909	3 7.766	3 17.622	3 27.479	3 37.335	3 47.192	3	0.008
4	2 38.361	2 48.217	2 58.074	3 7.930	3 17.787	3 27.643	3 37.500	3 47.356	4	0.011
5	2 38.525	2 48.381	2 58.238	3 8.094	3 17.951	3 27.807	3 37.664	3 47.520	5	0.014
6	2 38.689	2 48.546	2 58.402	3 8.259	3 18.115	3 27.972	3 37.828	3 47.685	6	0.016
7	2 38.854	2 48.710	2 58.566	3 8.423	3 18.279	3 28.136	3 37.992	3 47.849	7	0.019
8	2 39.018	2 48.874	2 58.731	3 8.587	3 18.444	3 28.300	3 38.157	3 48.013	8	0.022
9	2 39.182	2 49.039	2 58.895	3 8.751	3 18.608	3 28.464	3 38.321	3 48.177	9	0.025
10	2 39.346	2 49.203	2 59.059	3 8.916	3 18.772	3 28.629	3 38.485	3 48.342	10	0.027
11	2 39.511	2 49.367	2 59.224	3 9.080	3 18.937	3 28.793	3 38.649	3 48.506	11	0.030
12	2 39.675	2 49.531	2 59.388	3 9.244	3 19.101	3 28.957	3 38.814	3 48.670	12	0.033
13	2 39.839	2 49.696	2 59.552	3 9.409	3 19.265	3 29.122	3 38.978	3 48.834	13	0.036
14	2 40.003	2 49.860	2 59.716	3 9.573	3 19.429	3 29.286	3 39.142	3 48.999	14	0.038
15	2 40.168	2 50.024	2 59.881	3 9.737	3 19.594	3 29.450	3 39.307	3 49.163	15	0.041
16	2 40.332	2 50.188	3 0.045	3 9.901	3 19.758	3 29.614	3 39.471	3 49.327	16	0.044
17	2 40.496	2 50.353	3 0.209	3 10.066	3 19.922	3 29.779	3 39.635	3 49.492	17	0.047
18	2 40.661	2 50.517	3 0.373	3 10.230	3 20.086	3 29.943	3 39.799	3 49.656	18	0.049
19	2 40.825	2 50.681	3 0.538	3 10.394	3 20.251	3 30.107	3 39.964	3 49.820	19	0.052
20	2 40.989	2 50.846	3 0.702	3 10.559	3 20.415	3 30.271	3 40.128	3 49.984	20	0.055
21	2 41.153	2 51.010	3 0.866	3 10.723	3 20.579	3 30.436	3 40.292	3 50.149	21	0.057
22	2 41.318	2 51.174	3 1.031	3 10.887	3 20.744	3 30.600	3 40.456	3 50.313	22	0.060
23	2 41.482	2 51.338	3 1.195	3 11.051	3 20.908	3 30.764	3 40.621	3 50.477	23	0.063
24	2 41.646	2 51.503	3 1.359	3 11.216	3 21.072	3 30.929	3 40.785	3 50.642	24	0.066
25	2 41.810	2 51.667	3 1.523	3 11.380	3 21.236	3 31.093	3 40.949	3 50.806	25	0.068
26	2 41.975	2 51.831	3 1.688	3 11.544	3 21.401	3 31.257	3 41.114	3 50.970	25	0.071
27	2 42.139	2 51.995	3 1.852	3 11.708	3 21.565	3 31.421	3 41.278	3 51.134	27	0.074
28	2 42.303	2 52.160	3 2.016	3 11.873	3 21.729	3 31.586	3 41.442	3 51.299	28	0.077
29	2 42.468	2 52.324	3 2.181	3 12.037	3 21.893	3 31.750	3 41.606	3 51.463	29	0.079
30	2 42.632	2 52.488	3 2.345	3 12.201	3 22.058	3 31.914	3 41.771	3 51.627	30	0.082
31	2 42.796	2 52.653	3 2.509	3 12.366	3 22.222	3 32.078	3 41.935	3 51.791	31	0.085
32	2 42.960	2 52.817	3 2.673	3 12.530	3 22.386	3 32.243	3 42.099	3 51.956	32	0.088
33	2 43.125	2 52.981	3 2.838	3 12.694	3 22.551	3 32.407	3 42.264	3 52.120	33	0.090
34	2 43.289	2 53.145	3 3.002	3 12.858	3 22.715	3 32.571	3 42.428	3 52.284	34	0.093
35	2 43.453	2 53.310	3 3.166	3 13.023	3 22.879	3 32.736	3 42.592	3 52.449	35	0.096
36	2 43.617	2 53.474	3 3.330	3 13.187	3 23.043	3 32.900	3 42.756	3 52.613	36	0.099
37	2 43.782	2 53.638	3 3.495	3 13.351	3 23.208	3 33.064	3 42.921	3 52.777	37	0.101
38	2 43.946	2 53.803	3 3.659	3 13.515	3 23.372	3 33.228	3 43.085	3 52.941	38	0.104
39	2 44.110	2 53.967	3 3.823	3 13.680	3 23.536	3 33.393	3 43.249	3 53.106	39	0.107
40	2 44.275	2 54.131	3 3.988	3 13.844	3 23.700	3 33.557	3 43.413	3 53.270	40	0.110
41	2 44.439	2 54.295	3 4.152	3 14.008	3 23.865	3 33.721	3 43.578	3 53.434	41	0.112
42	2 44.603	2 54.460	3 4.316	3 14.173	3 24.029	3 33.886	3 43.742	3 53.598	42	0.115
43	2 44.767	2 54.624	3 4.480	3 14.337	3 24.193	3 34.050	3 43.906	3 53.763	43	0.118
44	2 44.932	2 54.788	3 4.645	3 14.501	3 24.358	3 34.214	3 44.071	3 53.927	44	0.120
45	2 45.096	2 54.952	3 4.809	3 14.665	3 24.522	3 34.378	3 44.235	3 54.091	45	0.123
46	2 45.260	2 55.117	3 4.973	3 14.830	3 24.686	3 34.543	3 44.399	3 54.256	46	0.126
47	2 45.425	2 55.281	3 5.137	3 14.994	3 24.850	3 34.707	3 44.563	3 54.420	47	0.129
48	2 45.589	2 55.445	3 5.302	3 15.158	3 25.015	3 34.871	3 44.728	3 54.584	48	0.131
49	2 45.753	2 55.610	3 5.466	3 15.322	3 25.179	3 35.035	3 44.892	3 54.748	49	0.134
50	2 45.917	2 55.774	3 5.630	3 15.487	3 25.343	3 35.200	3 45.056	3 54.913	50	0.137
51	2 46.082	2 55.938	3 5.795	3 15.651	3 25.508	3 35.364	3 45.220	3 55.077	51	0.140
52	2 46.246	2 56.102	3 5.959	3 15.815	3 25.672	3 35.528	3 45.385	3 55.241	52	0.142
53	2 46.410	2 56.267	3 6.123	3 15.980	3 25.836	3 35.693	3 45.549	3 55.405	53	0.145
54	2 46.574	2 56.431	3 6.287	3 16.144	3 26.000	3 35.857	3 45.713	3 55.570	54	0.148
55	2 46.739	2 56.595	3 6.452	3 16.308	3 26.165	3 36.021	3 45.878	3 55.734	55	0.151
56	2 46.903	2 56.759	3 6.616	3 16.472	3 26.329	3 36.185	3 46.042	3 55.898	56	0.153
57	2 47.067	2 56.924	3 6.780	3 16.637	3 26.493	3 36.350	3 46.206	3 56.063	57	0.156
58	2 47.232	2 57.088	3 6.944	3 16.801	3 26.657	3 36.514	3 46.370	3 56.227	58	0.159
59	2 47.396	2 57.252	3 7.109	3 16.965	3 26.822	3 36.678	3 46.535	3 56.391	59	0.162
Mean Solar.	$16^{\mathrm{h.}}$	$17^{\mathrm{h.}}$	$18^{\mathrm{h.}}$	$19^{\mathrm{h.}}$	$20^{\mathrm{h.}}$	$21^{\mathrm{h.}}$	$22^{\mathrm{h.}}$	$23^{\mathrm{h.}}$	For Seconds.	

TABLE FOR FINDING THE LATITUDE BY AN OBSERVED ALTITUDE OF POLARIS.

Reduce the observed altitude of Polaris to the true altitude.

Reduce the recorded time of observation to local sidereal time.

If the sidereal time is
- **less than 1^h 20^m.1, subtract it from 1^h 20^m.1;**
- **between 1^h 20^m.1 and 13^h 20^m.1, subtract 1^h 20^m.1 from it;**
- **greater than 13^h 20^m.1, subtract it from 25^h 20^m.1;**

and the remainder is the hour-angle of Polaris.

With this hour-angle take out the correction from Table IV (below), and add it to or subtract it from the true altitude, according to its sign. The result is the latitude of the place.

Example.—1894, November 10, at 9^h 29^m 29^s, P. M., mean solar time, in longitude 29° east of Greenwich, suppose the true altitude of Polaris to be 29° 29′: required the latitude of the place.

	h	m	s
Local astronomical mean time	9	29	29
Reduction from Table III, for 9^h 29^m 29^s	+	1	34
Greenwich sidereal time of mean noon, November 10, page 183 .	15	19	28.3
Reduction from Table III, for longitude (= 1^h 56^m east, or minus)	—	0	19
Sum (having regard to signs) is equal to local sidereal time. .	0	50	12.3
	h	m	s
	1	20	6
Subtract sidereal time	0	50	12.3
Remainder is equal to hour-angle of Polaris	0	29	53.7

	°	′
True altitude	+29	29.0
Correction from Table IV (below) .	— 1	14.8
Approximate Latitude . . .	+28	14.2

TABLE IV—1894.

Hour-Angle.	0$^{h.}$		1$^{h.}$		2$^{h.}$		3$^{h.}$		4$^{h.}$		5$^{h.}$	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	−1 15.4		−1 12.8		−1 5.1		−0 52.9		−0 37.1		−0 18.7	
		0.0		0.4		0.8		1.2		1.5		1.6
5	1 15.4		1 12.4		1 4.3		0 51.7		0 35.6		0 17.1	
		0.0		0.5		0.9		1.2		1.4		1.6
10	1 15.4		1 11.9		1 3.4		0 50.5		0 34.2		0 15.5	
		0.1		0.5		0.9		1.2		1.5		1.6
15	1 15.3		1 11.4		1 2.5		0 49.3		0 32.7		0 13.9	
		0.2		0.6		1.0		1.3		1.5		1.6
20	−1 15.1		−1 10.8		−1 1.5		−0 48.0		−0 31.2		−0 12.3	
		0.1		0.6		1.0		1.3		1.5		1.6
25	1 15.0		1 10.2		1 0.5		0 46.7		0 29.7		0 10.7	
		0.2		0.6		1.0		1.3		1.5		1.7
30	1 14.8		1 9.6		0 59.5		0 45.4		0 28.2		0 9.0	
		0.3		0.7		1.0		1.3		1.6		1.6
35	1 14.5		1 8.9		0 58.5		0 44.1		0 26.6		0 7.4	
		0.2		0.7		1.1		1.4		1.5		1.6
40	−1 14.3		−1 8.2		−0 57.4		−0 42.7		−0 25.1		−0 5.8	
		0.3		0.7		1.0		1.4		1.6		1.7
45	1 14.0		1 7.5		0 56.4		0 41.3		0 23.5		0 4.1	
		0.4		0.8		1.2		1.4		1.6		1.6
50	1 13.6		1 6.7		0 55.2		0 39.9		0 21.9		0 2.5	
		0.4		0.8		1.1		1.4		1.6		1.7
55	1 13.2		1 5.9		0 54.1		0 38.5		0 20.3		−0 0.8	
		0.4		0.8		1.2		1.4		1.6		1.6
60	−1 12.8		−1 5.1		−0 52.9		−0 37.1		−0 18.7		+0 0.8	

Hour-Angle.	6$^{h.}$		7$^{h.}$		8$^{h.}$		9$^{h.}$		10$^{h.}$		11$^{h.}$	
m	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′	° ′	′
0	+0 0.8		+0 20.3		+0 38.3		+0 53.7		+1 5.5		+1 12.9	
		1.7		1.6		1.4		1.2		0.8		0.4
5	0 2.5		0 21.9		0 39.7		0 54.9		1 6.3		1 13.3	
		1.6		1.5		1.4		1.1		0.8		0.4
10	0 4.1		0 23.4		0 41.1		0 56.0		1 7.1		1 13.7	
		1.6		1.6		1.4		1.1		0.7		0.3
15	0 5.7		0 25.0		0 42.5		0 57.1		1 7.8		1 14.0	
		1.7		1.5		1.3		1.0		0.7		0.3
20	+0 7.4		+0 26.5		+0 43.8		+0 58.1		+1 8.5		+1 14.3	
		1.6		1.6		1.3		1.0		0.7		0.3
25	0 9.0		0 28.1		0 45.1		0 59.1		1 9.2		1 14.6	
		1.7		1.5		1.3		1.0		0.6		0.2
30	0 10.7		0 29.6		0 46.4		1 0.1		1 9.8		1 14.8	
		1.6		1.5		1.3		1.0		0.6		0.2
35	0 12.3		0 31.1		0 47.7		1 1.1		1 10.4		1 15.0	
		1.6		1.5		1.3		1.0		0.6		0.1
40	+0 13.9		+0 32.6		+0 49.0		+1 2.1		+1 11.0		+1 15.1	
		1.6		1.4		1.2		0.9		0.5		0.2
45	0 15.5		0 34.0		0 50.2		1 3.0		1 11.5		1 15.3	
		1.6		1.5		1.2		0.9		0.5		0.1
50	0 17.1		0 35.5		0 51.4		1 3.9		1 12.0		1 15.4	
		1.6		1.4		1.2		0.8		0.5		0.0
55	0 18.7		0 36.9		0 52.6		1 4.7		1 12.5		1 15.4	
		1.6		1.4		1.1		0.8		0.4		0.0
60	+0 20.3		+0 38.3		+0 53.7		+1 5.5		+1 12.9		+1 15.4	